SAF-RC-075 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0872 SAF-RC-075

Waste Site: 100-D-81

Date:

24 November 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Site 100-D-81

Subject:

Inorganic - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	С	See note 1
J1V114	10/15/14	Soil	С	See note 1
J1V115	10/15/14	Soil	С	See note 1
J1V116	10/15/14	Soil	С	See note 1
J1V117	10/15/14	Soil	С	See note 1
J1V118	10/15/14	Soil	С	See note 1
J1V119	10/15/14	Soil	С	See note 1
J1V120	10/15/14	Soil	С	See note 1
J1V121	10/15/14	Soil	С	See note 1
J1V122	10/15/14	Soil	С	See note 1
J1V123	10/15/14	Soil	С	See note 1
J1V124	10/15/14	Soil	С	See note 1
J1V125	10/15/14	Soil	C	See note 1
J1V126	10/15/14	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the silver results in samples J1V121, J1V122 and J1V126 were qualified as undetected and flagged "UJ".

Due to method blank contamination, the zinc result in sample J1V126 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1V126) was submitted for analysis. Twelve analytes were detected in the field blank. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (67%) and silicon (17%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (8%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V122/J1V125) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the silver results in samples J1V121, J1V122 and J1V126 were qualified as undetected and flagged "UJ".
- Due to method blank contamination, the zinc result in sample J1V126 was qualified as undetected and flagged "UJ".
- Due to matrix spike recoveries outside QC limits, all antimony (67%) and silicon (17%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (8%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

<u>REFERENCES</u>

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery
Antimony Silicon	J	All	MS recovery
Silver	UJ	J1V121, J1V122 J1V126	Method blank contamination
Zinc	UJ	J1V126	Method bank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V113

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-1

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1252

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:

6010B 3050B

Prep Method: Dilution:

Analysis Date:

Prep Date:

1.0

10/21/2014 0040 10/20/2014 0700 Analysis Batch:

Prep Batch:

280-248842 280-248528 M11/22/14

Instrument ID:

MT_026

Lab File ID: Initial Weight/Volume: 26e102014.asc

Final Weight/Volume:

1.08 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4540	X	1.5	4.8
Antimony		0.37	υJ	0.37	0.58
Arsenic		2.0	•	0.64	0 96
Barium		38.5	Х	0.073	0.48
Boron		0.95	U	0.95	1.9
Calcium		7970	X	13.6	48.2
Chromium		3.6	X	0.056	0.19
Cobalt		7.1	X	0.096	0.96
Copper		13.8	Х	0.21	0.96
Iron		21600	X	3.7	4.8
Lead		2.8		0.26	0.48
Magnesium		3370	X	3.6	19.3
Manganese		248	X	0.096	0.96
Molybdenum		0.25	Ü	0.25	1.9
Potassium		466	•	39.5	289
Selenium		0.83	U .	0.83	0.96
Silicon		325	NX J	5.5	9.6
Silver		0.15	U 3	0.15	0.19
		51.7	x	0.091	1.9
Vanadium		35.4	X	0.38	0.96
Zinc		33.7	^	0.00	-:- -

Analysis Method:

Prep Method:

6010B 3050B

Dilution: 1.0

Analysis Date: Prep Date:

10/21/2014 1828 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID:

Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.08 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	
Cadmium		0.11	В	0.040	0.19	
Nickel		6.5		0.12	3.9	
Sodium		386		56.9	116	

Analysis Method: Prep Method:

6010B 3050B 2.0

Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID:

Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.08 q 100 mL

Analysis Date: Prep Date:

10/21/2014 1934 10/20/2014 0700

Result (mg/Kg)

Qualifier

MDL

Analyte Beryllium

Dilution:

DryWt Corrected: Y

0.064

U

0.064

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V113

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-1

Client Matrix:

Solid

% Moisture:

Analysis Batch:

Prep Batch:

4.0

280-249102

280-248899

11/22/19

Date Sampled: 10/15/2014 1252

Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:

7471A 7471A

Prep Method: Dilution:

1.0

Analysis Date:

Prep Date:

10/21/2014 1857 10/21/2014 1515

Result (mg/Kg)

Qualifier

MDL

Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Lab File ID:

50 mL

141021aa.txt

MT_033

0.69 g

Analyte Mercury DryWt Corrected: Y

0.0050

Ū

0.0050

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V114

Lab Sample ID:

280-61368-2

Client Matrix:

Solid

% Moisture:

4.3

Date Sampled: 10/15/2014 1242

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B

1.0

Analysis Date: Prep Date:

Dilution:

10/21/2014 0051 10/20/2014 0700 Analysis Batch: Prep Batch:

280-248842 280-248528 W, 1/22/14

Instrument ID

Lab File ID:

MT_026 26e102014 asc

Initial Weight/Volume: Final Weight/Volume: 1.12 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5070	X	1.4	4.7
Antimony		0.35	لن∪	0.35	0.56
Arsenic		2.1		0.62	0.93
Barium		58.6	X	0.071	0.47
Boron		0.91	U	0.91	1.9
Calcium		5420	X	13.1	46.6
Chromium		3.8	Х	0.054	0.19
Cobalt		7.0	X	0.093	0.93
Copper		14.1	X	0.20	0.93
ron		23300	Х	3.5	4.7
Lead		3.1		0.25	0.47
Magnesium		3200	X	3.5	18.7
Manganese		252	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Potassium		541		38.2	280
Selenium		0.80	U	0.80	0.93
Silicon		281	L XN	5.3	9.3
Silver		0.15	u	0.15	0.19
Vanadium		64.9	X	0.088	1.9
Zinc		38.8	X	0.37	0.93

Analysis Method: Prep Method:

6010B

Dilution: 1.0

Analysis Date: Prep Date:

3050B

10/21/2014 1839 10/20/2014 0700

Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID: Lab File ID:

Initial Weight/Volume:

Final Weight/Volume:

MT_026 26c102114.asc

1.12 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.13	В	0.038	0 19
Nickel		6.2		0.11	3.7
Sodium		234		55.0	112

Analysis Method: Prep Method:

Analysis Date: Prep Date:

Dilution:

6010B 3050B

2.0

10/21/2014 1945 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID:

Lab File ID: Initial Weight/Volume: Final Weight/Volume:

MT_026 26c102114.asc

1.12 g 100 mL

MDL RL Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier Beryllium 0.062 Ū 0.062 0.37

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V114

Lab Sample ID:

280-61368-2

Client Matrix:

Solid

% Moisture:

4.3

Date Sampled: 10/15/2014 1242

Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:

7471A

7471A

Prep Method: Dilution:

1.0

Client: Washington Closure Hanford

Analysis Date: Prep Date:

10/21/2014 1904 10/21/2014 1515 Analysis Batch: Prep Batch:

280-248899 122/14

280-249102

Instrument ID:

Lab File ID:

MT_033 141021aa.txt

Initial Weight/Volume:

0.55 g

Final Weight/Volume:

50 mL

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0063

Qualifier Ū

MDL 0.0063

RL 0.019

Page 523of 118

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V115

Client: Washington Closure Hanford

Lab Sample ID:

Client Matrix:

Solid

280-61368-3

% Moisture:

Date Sampled: 10/15/2014 1248

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B

3050B

1.0

Analysis Date: Prep Date:

Dilution:

10/21/2014 0053 10/20/2014 0700 Analysis Batch: Prep Batch:

280-248842 280-248528 Milarly

3.6

Lab File ID:

Instrument ID:

MT_026 26e102014.asc

Initial Weight/Volume: Final Weight/Volume:

1.10 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7180	×	1.5	4.7
Antimony		0.36	υĴ	0.36	0.57
Arsenic		2.7		0.62	0.94
Barium		68.8	X	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.5	В	0.92	1.9
Calcium		7310	Х	13.3	47.2
Chromium		10.7	Х	0.055	0.19
Cobalt		7.1	Χ	0.094	0.94
Copper		14.2	Х	0.20	0.94
ron		20700	X	3.6	4.7
Lead		3.8		0.25	0.47
Magnesium		4460	Х	3.5	18.9
Vlagnesioni Vlanganese		309	X	0.094	0.94
Molybdenum		0.25	U	0.25	1.9
Potassium		1200		38.7	283
Selenium		0.81	U ~	0.81	0.94
Silicon		553	NX J	5.3	9.4
Silver		0.15	U	0.15	0.19
Vanadium		42.9	X	0.089	1.9
Zinc		36.2	X	0.38	0.94

Analysis Method:

Analysis Date: Prep Date:

Prep Method: Dilution:

6010B 3050B

1.0

10/21/2014 1841 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume: 1.10 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.16	В	0.039	0.19
Nickel		11.9		0.12	3.8
Sodium		187		55.7	113

7471A Mercury (CVAA)

Analysis Method: Prep Method:

Analysis Date:

7471A 7471A 1.0

10/21/2014 1906 10/21/2014 1515 Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID: Lab File ID:

MT_033 141021aa.txt

Initial Weight/Volume: Final Weight/Volume:

0.66 g 50 mL

Prep Date: Analyte

Dilution:

DryWt Corrected: Y

Result (mg/Kg) 0.0052

Qualifier

MDL 0.0052 RL 0.016

TestAmerica Denver

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V116

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-4

Client Matrix:

Solid

% Moisture:

Analysis Batch:

Prep Batch:

5.9

Date Sampled: 10/15/2014 1232

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B

1.0

Dilution: Analysis Date: Prep Date:

10/21/2014 0056

10/20/2014 0700

280-248842

280-248528

V11/22/14

Instrument ID: Lab File ID:

MT_026 26e102014.asc

Initial Weight/Volume: Final Weight/Volume:

1.00 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	our allers
Aluminum		8830	X	1.6	5.3	
Antimony		0.40	UJ	0.40	0.64	
Arsenic		2.9		0.70	1.1	
Barium		71.8	X	0.081	0.53	
Beryllium		0.035	U	0.035	0.21	
Boron		1.7	В	1.0	2.1	
Calcium		4010	X	15.0	53.1	
Chromium		12.5	X	0.062	0.21	
Cobalt		7.5	Χ	0.11	1.1	
Copper		14.4	X	0.23	1.1	
Iron		22600	X	4.0	5.3	
Lead		4.8		0.29	0.53	
Magnesium		4520	X	3.9	21.3	
Manganese		347	Х	0.11	1.1	
Molybdenum		0.28	U	0.28	2.1	
Potassium		1610		43.6	319	
Selenium		0.91	U .	0.91	11	
Silicon		696	L XN	6.0	10.6	
Silver		0.17	U	0.17	0.21	
Vanadium		45.9	X	0.10	2.1	
Zinc		39.9	X	0.42	1.1	

Analysis Method:

Prep Method:

6010B 3050B

Dilution:

Analysis Date: Prep Date:

1.0

10/21/2014 1844 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID:

Lab File ID: Initial Weight/Volume: Final Weight/Volume: MT_026 26c102114.asc

1.00 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.13	В	0.044	0.21
Nickel		12.5		0.13	4.3
Sodium		179		62.7	128

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A 1.0

Analysis Batch: Prep Batch:

280-249102 280-248899

Instrument ID: Lab File ID:

Final Weight/Volume:

MT_033 141021aa.txt

0.51 g Initial Weight/Volume: 50 mL

10/21/2014 1909 Analysis Date:

Prep Date:

10/21/2014 1515

Result (mg/Kg)

Qualifier

MDL 0.0069 RL 0.021

Analyte Mercury

Dilution:

DryWt Corrected: Y

0.0069

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V117

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-5

Client Matrix:

Solid

% Moisture:

3.5

Date Sampled: 10/15/2014 1238

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:

6010B 3050B Analysis Batch:

280-248842 280-248528 Instrument ID: Lab File ID:

MT_026 26e102014.asc

Prep Method: Dilution:

1.0

Prep Batch:

Initial Weight/Volume:

1.03 g

Analysis Date: Prep Date:

10/21/2014 0059

10/20/2014 0700

Viluly

Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5670	X 🛣	1.6	5.0
Antimony		0.38	υJ	0.38	0.60
Arsenic		2.4		0.66	1.0
Barium		45.3	Х	0.076	0.50
		0.99	U	0.99	2.0
Boron	·	10400	X	14.2	50.3
Calcium		7.9	X	0.058	0.20
Chromium		6.5	X	0.10	1.0
Cobalt		13.8	X	0.22	1.0
Copper		20800	X	3.8	5.0
Iron		2.9	Α	0.27	0 50
Lead			×	3.7	20.1
Magnesium		4150	x	0.10	1.0
Manganese		259	B	0.26	2.0
Molybdenum		0.28	В	41.2	302
Potassium		634			1.0
Selenium		0.87	U 7	0.87	10.1
Silicon		408	Схи	5.7	
Silver		0.1 6	U	0.16	0.20
Vanadium		49.0	X	0.095	2.0
Zinc		37.1	X	0.40	1.0

Analysis Method: Prep Method:

6010B 3050B 1.0

Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume: 1.03 g 100 mL

Analysis Date:

Dilution:

10/21/2014 1847

Prep Date:	10/20/2014 0700
Analyte	DryWt Co

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Beryllium	and an experience of the second secon	0.033	U	0.033	0.20
Cadmium		0.12	В	0.041 0.12	0.20 4.0
Nickel Sodium		9.4 243		59.3	121

7471A Mercury (CVAA)

Analysis Method: Prep Method:

Dilution:

7471A 7471A

1.0

Analysis Batch: Prep Batch:

280-249102 280-248899

Instrument ID: Lab File ID:

MT_033 141021aa.txt

Initial Weight/Volume: Final Weight/Volume:

0.65 g 50 mL

10/21/2014 1911 Analysis Date: 10/21/2014 1515 Prep Date:

DryWt Corrected: Y Analyte Mercury

Result (mg/Kg) 0.0053

Qualifier

MDL 0.0053

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V118

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-6

Client Matrix:

Solid

% Moisture:

3.1

Date Sampled: 10/15/2014 1223

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:

6010B 3050B

Analysis Batch:

280-248842

Instrument ID:

MT_026

Prep Method: Dilution:

1.0

Prep Batch:

280-248528

Lab File ID: Initial Weight/Volume: 26e102014.asc

Analysis Date:

Prep Date:

10/21/2014 0112

10/20/2014 0700

(1/22/19

1.07 g Final Weight/Volume: 100 mL

Anal yte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5560	X	1.5	4.8
Antimony		0.37	υĴ	0.37	0.58
Arsenic		2.2		0.64	0.96
Barium		61.2	X	0.073	0.48
Boron		0.95	U	0.95	1.9
Calcium		8250	X	13.6	48.2
Chromium		7.1	Χ	0.056	0.19
Cobalt		7.6	X	0.096	0.96
		15.0	Х	0.21	0.96
Copper Iron		23100	X	3.7	4.8
		3.1		0.26	0.48
Lead		4060	X	3.6	19.3
Magnesium		271	X	0.096	0.96
Manganese		0.25	Û	0.25	1.9
Molybdenum		670	Ü	39.6	289
Potassium		0.83	U	0.83	0.96
Selenium		695	Nx J	5.5	9.6
Silicon		0.15	U	0.15	0.19
Silver		54.1	X	0.091	1.9
Vanadium Zinc		40.1	x	0.38	0.96

Analysis Method: Prep Method:

Prep Date:

6010B 3050B Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID: Lab File ID:

MT_026 26c102114.asc

Dilution: Analysis Date:

1.0

10/21/2014 1900

10/20/2014 0700

Initial Weight/Volume: Final Weight/Volume:

1.07 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	
Cadmium		0.12	В	0.040	0.19	
Nickel		10.4		0.12	3.9	
Sodium		222		56.9	116	

Analysis Method: Prep Method:

6010B 3050B Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID: Lab File ID:

MT_026 26c102114.asc

Dilution: Analysis Date:

2.0 10/21/2014 1950 Initial Weight/Volume: Final Weight/Volume:

1.07 g 100 mL

Prep Date:

10/20/2014 0700

Analyte

Result (mg/Kg)

Qualifier

MDL

Beryllium

DryWt Corrected: Y

0.064

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0.064

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V118

Lab Sample ID:

280-61368-6

Client Matrix:

Solid

% Moisture:

3.1

Date Sampled: 10/15/2014 1223

Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

Client: Washington Closure Hanford

Analysis Batch: Prep Batch:

280-249102 280-248899

Instrument ID: Lab File ID: Initial Weight/Volume: MT_033 141021aa.txt 0.67 g

50 mL

Dilution: Analysis Date: 1.0

10/21/2014 1913

Prep Date:

10/21/2014 1515

Result (mg/Kg)

Qualifier

MDL

Final WeightVolume:

RL

Analyte Mercury DryWt Corrected: Y

0.0051

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0.0051

0.016

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V119

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-7

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1228

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

Prep Date:

6010B

3050B

1.0

Dilution: Analysis Date:

10/21/2014 0114

10/20/2014 0700

280-248842 Analysis Batch: 280-248528 Prep Batch:

Instrument ID:

MT_026

26e102014.asc 1.00 g

Lab File ID:

Lab File ID:

Initial Weight/Volume:

Final Weight

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7360	X _	1.6	5.2
Antimony		0.40	υJ	0.40	0.63
Arsenic		3.9		0.69	1.0
Barium		76. 6	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		1.3	В	1.0	2.1
Calcium		19800	Х	14.7	52.1
Chromium		13.3	Х	0.060	0.21
Cobalt		6.6	X	0.10	1.0
Copper		17.5	X	0.23	1.0
Iron		20100	X	4.0	5.2
Lead		3.8		0.28	0.52
Magnesium		4690	X	3.9	20.8
Manganese		299	X	0.10	1.0
Molybdenum		0.28	В	0.27	2.1
Potassium		922		42.7	313
Selenium		0.90	U _	0.90	1.0
Silicon		461	T XM	5.9	10.4
Silver		0.17	U	0.17	0.21
Vanadium		46.4	X	0.098	2.1
Zinc		36.2	X	0.41	1.0

Analysis Method:

Prep Method: Dilution:

6010B 3050B

1.0

10/21/2014 1903

Analysis Date: Prep Date:

10/20/2014 0700

280-249003 Analysis Batch: Prep Batch:

280-248528

Instrument ID: Lab File ID:

Initial Weight/Volume: Final Weight/Volume:

26c102114.asc

1.00 g 100 mL

MT_026

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.17	В	0.043	0.21
Nickel		13.0		0.13	4.2
Sodium		220		61.5	125
Codidin					

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A 1.0

Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID: Lab File ID:

MT 033

Initial Weight/Volume:

141021aa.txt 0.64 g

Final Weight/Volume:

50 mL

Prep Date:

Analysis Date:

Dilution:

Analyte

Mercury

10/21/2014 1920 10/21/2014 1515

DryWt Corrected: Y

Result (mg/Kg) 0.0054

Qualifier

MDL 0.0054

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V120

Client: Washington Closure Hanford

Lab Sample ID:

Client Matrix:

Solid

280-61368-8

% Moisture:

5.5

Date Sampled: 10/15/2014 1213

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B

3050B

Dilution:

Analysis Date: Prep Date:

1.0

10/21/2014 0117 10/20/2014 0700

Analysis Batch: Prep Batch:

280-248842

280-248528 m/1/22/19 Instrument ID:

MT_026 Lab File ID:

26e102014.asc

Initial Weight/Volume: Final Weight/Volume: 1.10 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6750	Χ _	1.5	4.8
Antimony		0.37	υJ	0.37	0.58
Arsenic		2.6		0.64	0.96
Barium		56.0	X	0.073	0.48
Beryllium		0.032	U	0.032	0.19
Boron		1.3	В	0.94	1.9
Calcium		5800	Χ	13.6	48.1
Chromium	•	9.3	X	0.056	0.19
Cobalt		7.6	X	0.096	0.96
		18.2	X	0.21	0.96
Copper Iron		22900	X	3.7	4.8
Lead		3.6		0.26	0.48
		4400	X	3.6	19.2
Magnesium		273	X	0.096	0.96
Manganese Molybdenum		0.25	Û	0.25	1.9
Potassium		739	-	39.4	289
		0.83	U _	0.83	0.96
Selenium		721	T XN	5.4	9.6
Silicon		0.15	Ü	0.15	0.19
Silver		51.9	X	0.090	1.9
Vanadium Zinc		40.2	X	0.38	0.96

Analysis Method:

Prep Method:

Analysis Date:

Prep Date:

Dilution:

6010B 3050B

1.0

10/21/2014 1905

10/20/2014 0700

Analysis Batch: 280-249003 280-248528 Prep Batch:

Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume: 1.10 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium		0.16	В	0.039	0.19
Nickel		11.1		0.12	3.8
Sodium		295		56.8	115

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

1.0

Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID: Lab File ID:

MT_033 141021aa.txt

Initial Weight/Volume:

0.56 g

Final Weight/Volume:

50 mL

Analysis Date: Prep Date:

Dilution:

Analyte

Mercury

10/21/2014 1922 10/21/2014 1515

DryWt Corrected: Y

Result (mg/Kg) 0.0063

Qualifier

MDL 0.0063

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V121

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-9

Client Matrix:

Solid

% Moisture:

5.0

Date Sampled: 10/15/2014 1218

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:

6010B

3050B

Prep Method: Dilution:

Analysis Date: Prep Date:

1.0

10/21/2014 0120 10/20/2014 0700 Analysis Batch: Prep Batch:

280-248842

280-248528

Instrument ID:

Lab File ID:

MT_026 26e102014.asc

Initial Weight/Volume: Final Weight/Volume:

1.19 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8260	× _	1.4	4.4
Antimony		0.34	\mathcal{L} v	0.34	0.53
Arsenic		3.1	_	0.58	0.88
Barium		84.9	X	0.067	0.44
Beryllium		0.029	U	0.029	0.18
Boron		1.5	В	0.87	1.8
Calcium		11500	X	12.5	44.2
Chromium		12.4	Х	0.051	0.18
Cobalt		6.6	Х	0.088	0.88
Copper		20.0	Х	0.19	0.88
Iron		20500	Х	3.4	4.4
Lead		4.5		0.24	0.44
Magnesium		4480	Χ	3.3	17.7
Manganese		305	X	0.088	0.88
Molybdenum		0.23	U	0.23	1.8
Potassium		1020		36.3	265
Selenium		0.76	U	0.76	0.88
Silicon		745	Схи	5.0	8.8
Silver		0.15	вс∪	0.14	0.18
Vanadium		43.1	Х	0.083	1.8
Zinc		37.7	X	0.35	0.88

Analysis Method:

Prep Method:

6010B 3050B

1.0

10/21/2014 1908

Analysis Date: Prep Date:

Dilution:

10/20/2014 0700

280-249003 Analysis Batch: Prep Batch:

280-248528

Instrument ID:

Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume: 1.19 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	
Cadmium		0.14	В	0.036	0.18	
Nickel		12.2		0.11	3.5	
Sodium		204		52.2	106	

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

1.0

Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument (D:

Lab File ID:

MT_033 141021aa.txt

Initial Weight/Volume:

0.61 g

Final Weight/Volume:

50 mL

Analysis Date: Prep Date:

10/21/2014 1515

10/21/2014 1925

Result (mg/Kg)

Qualifier

Analyte Mercury

Dilution:

DryWt Corrected: Y

0.0057

MDL 0.0057

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V122

Lab Sample ID:

280-61368-10

Client Matrix:

Solid

% Moisture:

3.7

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method:

6010B

Analysis Batch:

280-248842

Instrument ID:

MT 026

Prep Method:

3050B

Client: Washington Closure Hanford

Prep Batch:

280-248528

Lab File ID: ∜Initial Weight/Volume: 26e102014.asc

Dilution:

1.0

1.00 g

Analysis Date: Prep Date:

10/21/2014 0122

10/20/2014 0700

Final Weight/Volume:

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9190	× _	1.6	5.2
Antimony		0.39	υſ	0.39	0.62
Arsenic		2.7		0.69	1.0
Barium		83.9	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		2.5		1.0	2.1
		3820	X	14.6	51.9
Calcium		11.9	X	0.060	0.21
Chromium		7.7	X	0.10	1.0
Cobalt		13.5	X	0.23	1.0
Copper		23500	X	3.9	5.2
fron		4.9		0.28	0.52
Lead		4190	X	3.8	20.8
Magnesium		376	X	0.10	1.0
Manganese		0.27	Ü	0.27	2.1
Molybdenum		1930		42.6	311
Potassium		0.89	U	0.89	1.0
Selenium		796	T XN	5.9	10.4
Silicon		0.19	всО	0.17	0.21
Silver		50.4	X	0.098	2.1
Vanadium		43.6	X	0.41	1.0
Zinc		40.0	^	··	

Analysis Method:

Prep Method: Dilution:

6010B 3050B

1.0

Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.00 g 100 mL

Analysis Date:

10/21/2014 1911 10/20/2014 0700

Prep Date:

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier		RL
Cadmium		0.17	В	0.043	0.21
Nickel		11.8		0.13	4.2
Sodium		173		61.2	125

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID: Lab File ID:

MT 033 141021aa.txt

Dilution: Analysis Date:

1.0

10/21/2014 1927

10/21/2014 1515

Initial Weight/Volume: Final Weight/Volume:

0.65 g 50 mL

Prep Date:

Result (mg/Kg)

Qualifier

MDL

RL

Analyte Mercury DryWt Corrected: Y

0.0053

0.0053

0.016

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V123

Client: Washington Closure Hanford

Lab Sample ID:

Client Matrix:

Solid

280-61368-11

% Moisture:

3.2

Date Sampled: 10/15/2014 1209

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B

3050B 1.0

Dilution: Analysis Date:

Prep Date:

10/21/2014 0125 10/20/2014 0700 Analysis Batch:

280-248842

Instrument ID:

MT_026

Prep Batch:

280-248528

Lab File ID: Initial Weight/Volume: 26e102014.asc 1.15 g

Final Weight/Volume:

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL.	RL
Aluminum		5140	X	1.4	4.5
Antimony		0.34	υJ	0.34	0.54
Arsenic		2.1	•	0.59	0.90
Barium		51.1	Χ	0.068	0.45
Boron		0.88	U	0.88	1.8
Calcium		8150	X	12.7	44.9
Chromium		4.9	X	0.052	0.18
Cobalt		7.3	X	0.090	0.90
Copper		15.1	X	0.19	0.90
lron		24400	X	3.4	4.5
Lead		2.8		0.24	0.45
Leau Magnesium		4010	Χ.	3.3	18.0
Manganese		274	X	0.090	0.90
Molybdenum		0.23	Ü	0.23	1.8
Potassium		562		36.8	269
Selenium		0.77	U	0.77	0.90
Silicon		488	ĹΧΝ	5.1	9.0
		0.14	Ü	0.14	0.18
Silver Vanadium		58.4	X	0.084	1.8
Zinc		40.7	x	0.36	0.90

Analysis Method:

Prep Method: Dilution:

6010B 3050B

Analysis Date:

1.0 10/21/2014 1913

Prep Date:

10/20/2014 0700

Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID: Lab File ID:

Initial Weight/Volume:

MT_026 26c102114.asc

Final Weight/Volume:

1.15 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL.	RL
Cadmium		0.11	В	0.037	0.18
Nickel		8.8		0.11	3.6
Sodium		331		53.0	108

Analysis Method: Prep Method:

6010B 3050B

2.0

Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.15 g 100 mL

Analysis Date: Prep Date:

10/21/2014 1953 10/20/2014 0700

Result (mg/Kg)

Qualifier

MDL

Analyte Beryllium

Dilution:

DryWt Corrected: Y

0.059

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0.059

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V123

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-11

Client Matrix:

Solid

% Moisture:

3.2

Date Sampled: 10/15/2014 1209

Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A

7471A

Dilution: 1.0

Analysis Date: Prep Date:

10/21/2014 1929

10/21/2014 1515

Analysis Batch:

Prep Batch:

280-249102

280-248899

Instrument ID:

MT_033

Lab File ID:

141021aa.txt

Initial Weight/Volume: Final Weight/Volume:

0.55 g

50 mL

Analyte Mercury

DryWt Corrected: Y

Result (mg/Kg) 0.0062

Qualifier

MDL 0.0062

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample iD:

J1V124

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-12

Client Matrix:

Solid

% Moisture:

5.3

Date Sampled: 10/15/2014 1308 Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B Analysis Batch: Prep Batch:

280-248842 280-248528 Instrument ID: Lab File ID:

MT 026 26e102014.asc

Dilution: Analysis Date:

Prep Date:

1.0

10/21/2014 0128 10/20/2014 0700 V11/22/19

Initial Weight/Volume: Final Weight/Volume:

1.15 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		8050	X _	1.4	4.6
Antimony		0.35	υJ	0.35	0.55
Arsenic		7.6		0.61	0.92
		81.1	X	0.070	0.46
Barium		2.2		0.90	1.8
Boron		5580	X	13.0	45.9
Calcium		12.4	X	0.053	0.18
Chromium		7.9	X	0.092	0.92
Cobalt		19.8	X	0.20	0.92
Copper		24600	X	3.5	4.6
Iron			^	0.25	0.46
Lead		18.9	X	3.4	18.4
Magnesium		4550		0.092	0.92
Manganese		320	X		1.8
Molybdenum		0.24	U	0.24	1.6 276
Potassium		1230		37.7	
Selenium		0.79	U	0.79	0.92
Silicon		473	L'XN	5.2	9.2
Silver		0.15	U	0.15	0.18
Vanadium		59.0	X	0.086	1.8
Zinc		146	X	0.37	0.92

Analysis Method: Prep Method:

6010B 3050B 1.0

Analysis Batch: Prep Batch:

280-249003 280-248528 Instrument ID: Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.15 g 100 mL

Dilution: Analysis Date:

10/21/2014 1916

Prep Date:

10/20/2014 0700

Analyte [DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL	
Cadmium		1.3		0.038	0.18	
Nickel		12.6		0.11	3.7	
Sodium		276		54.2	110	

Analysis Method:

6010B 3050B Analysis Batch: Prep Batch:

280-249003 280-248528

Instrument ID: Lab File ID:

MT_026 26c102114.asc

Prep Method: Dilution: 2.0

10/21/2014 1955

Initial Weight/Volume: Final Weight/Volume:

1.15 g 100 mL

Analysis Date: Prep Date:

10/20/2014 0700

Result (mg/Kg)

Qualifier

MDL

Analyte Beryllium DryWt Corrected: Y

0.061

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0.061

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V124

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-12

10/21/2014 1515

Client Matrix:

Solid

% Moisture:

Date Sampled: 10/15/2014 1308

Date Received: 10/17/2014 0900

7471A Mercury (CVAA)

Analysis Method:

7471A

Analysis Batch:

280-249102

Instrument ID:

MT_033

Prep Method:

7471A

Prep Batch:

280-248899

5.3

Lab File ID:

141021aa.txt

Dilution: Analysis Date: 1.0 10/21/2014 1932

Initial Weight/Volume: Final Weight/Volume:

0.64 g 50 mL

Prep Date:

Analyte

Mercury

DryWt Corrected: Y

Result (mg/Kg) 0.010

Qualifier

MDL 0.0055 RL 0.017

Page 636 118

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V125

Lab Sample ID:

280-61368-13

Client Matrix:

Solid

% Moisture:

9.4

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B

3050B 1.0

Dilution: Analysis Date:

10/21/2014 0130 Prep Date: 10/20/2014 0700

Client: Washington Closure Hanford

Analysis Batch: Prep Batch:

280-248842 280-248528 1122/14 Instrument ID:

MT 026 26e102014.asc Lab File ID:

Initial Weight/Volume: Final Weight/Volume: 100 mL

1.06 g

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9580	X	1.6	5.2
Antimony		0.40	υJ	0.40	0.62
Arsenic		3.0	_	0.69	1.0
		83.4	Х	0.079	0.52
Barium		0.034	Ü	0.034	0.21
Beryllium		2.1	-	1.0	2.1
Boron		3970	X	14.7	52.1
Calcium		12.2	x	0.060	0.21
Chromium		7.8	x	0.10	1.0
Cobalt			x	0.23	1.0
Copper		14.3	×	4.0	5.2
Iron		24300	^	0.28	0.52
Lead		5.0	v	3.9	20.8
Magnesium		4510	X	0.10	1.0
Manganese		380	X	0.10	2.1
Molybdenum		0.27	U	42.7	312
Potassium		2020		0.90	1.0
Selenium		0.90	U		10.4
Silicon		676	NX 7	5.9	
Silver		0.17	U	0.17	0.21
Vanadium		49.7	X	0.098	2.1
Zinc		44.2	X	0.41	1.0

Analysis Method:

Prep Method:

Dilution:

6010B 3050B

1.0

Analysis Date:

Prep Date:

10/21/2014 1919 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528

Lab File ID:

Instrument ID: Initial Weight/Volume: MT_026 26c102114.asc 1.06 q

Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium Nickel Sodium		0.14 12.2 175	В	0.043 0.13 61.4	0.21 4.2 125

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A 1.0

Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID: Lab File ID:

MT 033

Initial Weight/Volume:

MDL

0.0063

141021aa.txt 0.58 g

Final Weight/Volume:

50 mL

10/21/2014 1515

10/21/2014 1934

Analysis Date: Prep Date:

Dilution:

Result (mg/Kg)

Qualifier

Analyte Mercury DryWt Corrected: Y

0.0063

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V126

Client: Washington Closure Hanford

Lab Sample ID:

Client Matrix:

Solid

280-61368-14

% Moisture:

Date Sampled: 10/15/2014 1157

Date Received: 10/17/2014 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B

1.0

Dilution: Analysis Date:

Prep Date:

10/21/2014 0133 10/20/2014 0700 Analysis Batch:

280-248842 280-248528 Wilrely

0.0

Instrument ID: Lab File ID:

MT_026

Prep Batch:

Initial Weight/Volume:

26e102014.asc

Final Weight/Volume:

1.19 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		118	X	1.3	4.2
		0.32	UJ	0.32	0.50
Antimony		0.55	Ū	0.55	0.84
Arsenic		1.2	X	0.064	0.42
Barium		0.028	Û	0.028	0.17
Beryllium		0.82	Ŭ	0.82	1.7
Boron			вх	11.8	42.0
Calcium		24.6	BX	0.049	0.17
Chromium		0.099	UX	0.084	0.84
Cobalt		0.084		0.18	0.84
Copper		0.22	вх	3.2	4.2
Iron		177	X		0.42
Lead		0.23	U	0.23	16.8
Magnesium		12.3	вх	3.1	
Manganese		2.8	X	0.084	0.84
Molybdenum		0.22	U	0.22	1.7
Potassium		36.0	В	34.5	252
Selenium		0.72	U —	0.72	0.84
Silicon		8.86	NX J_	4.8	8.4
Silver		0.16	BC UA	0.13	0.17
Vanadium		0.17	вх .	0.079	1.7
Zinc		0.92	cx O	0.33	0.84

Analysis Method: Prep Method:

6010B 3050B

Dilution: Analysis Date:

Prep Date:

1.0

10/21/2014 1921 10/20/2014 0700 Analysis Batch: Prep Batch:

280-249003 280-248528 instrument ID:

Lab File ID:

MT_026 26c102114.asc

Initial Weight/Volume: Final Weight/Volume:

1.19 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Cadmium Nickel		0.034 0.10	U U	0.03 4 0.10	0.17 3.4
Sodium		49.6	U	49.6	101

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

1.0

Analysis Batch: Prep Batch:

280-249102 280-248899 Instrument ID Lab File ID:

MT_033

141021aa.txt

Initial Weight/Volume: Final Weight/Volume: 0.56 g50 mL

Analysis Date: Prep Date:

10/21/2014 1936 10/21/2014 1515

Result (mg/Kg)

Qualifier

Analyte Mercury

Dilution:

DryWt Corrected: Y

0.0059

0.0059

MDL

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872 SAF#: RC-075

Date SDG Closed: October 17, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LABID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	· 6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs

No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRQ

C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington (Closure Han	ford CHA	AIN OF CUST	ODY/S	AMPL	E ANA	LYS	IS REQ	JEST	RC-	075-454	Page 1	of 3
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roject Designation		Samplin	ng Location					SAF No.		-	1 days	हैं।	3
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ither Labs Shipped To TestAmerica Richland			Preservation	Cool 4C	Cool 4C	Cool 4C	Coal 4	0					
		,	Type of Container	G/P	#G	aG.	#G			1			
OSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1						
lone			Volume	250mL	125mL	250mL	250ml						
ipecial Handling and/or tore 10-15-14CMB	Storage	.*	Sample Analysis	See llern (1) in Special Instructions	TPH-Dieses Range - WTPH-D +	PAHs - 8310	PG84 - 80	062					
Sample No.	Matrix	Sample Date	Sample Time			NEW TEN		udasamar					SHAKE!
J1V113V	SOIL	10/15/14	1252	Х,	× .	×,	×	•	P. Proceedings of the Party of	SUPERIOR			
J1V1144	SOIL	10(15/14	1242	x '	×'	x.	×	.					
J1V45	SOIL	10/15/14	1248	X.	×·	× .					1.		
J1V116	SOIL	10/15/14	1232	XI	x.	* -	×						
J1V117	SOIL	10/15/14	1238	×	× 1	x'	×	(
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ice Cheet No. KCC-O	7-013	1	ogbook No. -1662-03		000D81	2000		Method of Ship Commerci	pment al Carrier	/Fed	Ex			
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Other Labs Shipped To TestAmerica Richland		7.	Preservation	Cool 4C	. Cool 4C	Cool 4C	Cool 40							
			Type of Container	G/P	aG	•G	aG.							
POSSIBLE SAMPLE HAZ	ZARDS/REMARKS		No. of Container(s)	1	1	1	1							
None			Volume	250mL	125mL	250mL	250mL							
Special Handling and/or None 10 -15 -14 CmB	Storage		Sample Analysis	See item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 80	182						
Sample No.	Matrix	Sample Date	e Sample Time	ARTERIAL STATES	all little	MATERIA	VALUE OF THE PARTY		HINK!	IL COMPLETE	推划基础		類的學	
J1V118 ³	SOIL	10/15/19	4 1223	X'	x'	x ·	×							
J1V 1 49	SOIL	10/15/16	1228	x'	X.	×,	x'							
71/kg50	SOIL	10/15/10	1213	x.	X	X'	×							
J1V121	SOIL	10/15/10	1918	x ·	×	X.	x	1			-			
J1V122	SOIL	10/15/1	4 1905.	2	X	X	<u>×</u>	·						
CHAIN OF PC			Sign/Print Names			IAL INSTRI			• • • • • •	ntimony, Arsenic,	notes Dentile			
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Shipped To TestAmerica Denve		Offsite	Property No. #13/2	274				Bill of Lading/A	ir Bill No.	SPC				
Other Labe Shipped To TestAmerica Richland			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40							
			Type of Container	G/P	#G	eG	øG			·			-	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1							
None			Volume ,	250ml.	125mL	250mL	250mL	4						
Special Handling and/or	Storage		Sample Analysis	See Item (1) in Special Instructions	TPH-Diosel Range - WTPH-D +	PAHs - 8310	PCBs - 80	962					,	
0 0 1- 12-	Matrix	Sample Date	Sample Time	BILL SEE	A SAME		THE REAL PROPERTY.	THE STATE OF	INVEST	张 解源	多影響物源	NAME:	1	
J1VT25	SOIL	10/15/11	1 1209	x'	x!	x ·	X	•					-	
J1 V1 24	SOIL	10/15/10		X.	X	X.	×						_	
J1 \รี 25	SOIL	10/15/1		X.	×	x '	×	•						
J1V126	SOIL	10/15/1		X.	nIA	nin	NIA				-		+-	
CHAIN OF PO	SSESSION	1	Sign/Print Names	<u> </u>	SPEC	CIAL INSTRI	UCTIONS	 \$	<u> </u>		4			
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FINAL SAMPLE Disposal Me	thod	Dispo	need By Date/	Time		T 50 - 67	7>							
DISPOSITION WCH-EE-011						JP08-	TL							

Appendix 5 Data Validation Supporting Documentation

<u>V</u> ALIDATION LEVEL:	Α	В	(c)	D	E
PROJECT: (18-0-uc		DATA PACKAG	E: 18097	٧.
VALIDATOR:	ECR	LAB: TAL		DATE:	21/14
			SDG: 3	P0872	
		ANALYSES	PERFORMED		
SW-846/ICP	SW-846/GFA	SW-846/Hg	SW-846		
			Cyanide		
SAMPLES/MAT	RIX				
711113	YIVIL	JIVIIS	21116	J17117	
71111	J1 V119	JIVIZO	JIVISI	JIVIZ	
TINIS3	711154	21115	J11124		
210123		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~			
					a.(
		LETENESS AND O		'E	Yes (No) N/A
echnical verificat	ion documentation	LETENESS AND ('E	
echnical verificat	ion documentation	present?		'E	
echnical verificat	ion documentation	present?	LIBRATIONS (Lev	vels D and E)	Yes No N/A
echnical verificat comments: INSTRU	MENT PERFORM	present?	LIBRATIONS (Lev	vels D and E)	Yes No N/A
echnical verificat comments: INSTRU nitial calibrations	MENT PERFORM performed on all in	MANCE AND CAL	LIBRATIONS (Lev	els D and E)	Yes No N/A
echnical verificat comments: INSTRU nitial calibrations nitial calibrations CP interference cl	MENT PERFORM performed on all in acceptable?	MANCE AND CAL	LIBRATIONS (Lev	els D and E)	Yes No N/AYes No N/AYes No N/A
. INSTRUMINITIAL COMMENTS:	MENT PERFORM performed on all in acceptable? necks acceptable?	MANCE AND CAL	JIBRATIONS (Lev	vels D and E)	Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/A
INSTRUMENTALISM COMMENTS: INSTRUMENTALISM COMMENTS: INSTRUMENTALISM COMMENTS INSTRUMENTS INS	MENT PERFORM performed on all in acceptable? necks acceptable?	MANCE AND CAL	LIBRATIONS (Lev	els D and E)	Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/AYes No N/A
INSTRUMENTAL COMMENTS: INSTRUMENTAL COMMENTS: INSTRUMENTAL COMMENTS: INSTRUMENTS:	MENT PERFORM performed on all in acceptable? cks performed on al cks acceptable?	MANCE AND CAL struments?	LIBRATIONS (Lev	els D and E)	Yes No N/A
INSTRUMENTALISM COMMENTS: L. INSTRUMENTALISM COMMENTS INSTRUMENTALISM COMMENTS INSTRUMENTS I	MENT PERFORM performed on all in acceptable? necks acceptable? cks performed on all cks acceptable?	MANCE AND CAL struments?	LIBRATIONS (Lev	els D and E)	Yes No N/A Yes No N/A

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No N#
ICB and CCB results acceptable? (Levels D, E)	YEN NO (N/A
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Yes No N/A
Field blanks analyzed? (Levels C, D, E)	Yes No N/A
Field blank results acceptable? (Levels C, D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (V/A
Comments: ZINC-26-05	
Comments: 21 nc - 26 - 05 Silver - 21 22 - U5	
26	
FB - (Ideted)	
4. ACCURACY (Levels C, D, and E)	\sim
MS/MSD samples analyzed?	
MS/MSD results acceptable?	Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No
MS/MSD standards expired? (Levels D, E)	Yes No WA
LCS/BSS samples analyzed?	Yeg No N/A
LCS/BSS results acceptable?	Yes No W/A
Standards traceable? (Levels D, E)	Yes No NA
Standards expired? (Levels D, E)	Yes No
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Yer No N/A
Performance audit sample results acceptable?	Yes No WA
Comments: LCS- Silver (830) - Jal	
anting (6770) Silira (1770) - J	all
	ho pas
	no pas

5.	PRECISION (Levels C, D, and E)	
Dupli	icate RPD values acceptable?	Yes No N/A
Dupli	icate results acceptable?	Yes) No N/A
MS/N	MSD standards NIST traceable? (Levels D, E)	Yes Nd N/A
MS/N	MSD standards expired? (Levels D, E)	Yes No N/A
Field	duplicate RPD values acceptable?	Yes No NA
Field	I split RPD values acceptable?	Yes No NA
Trans	scription/calculation errors? (Levels D, E)	Yes No N/A
Com	nments:	
	22 25 -	
6.	ICP QUALITY CONTROL (Levels D and E)	
ICP	serial dilution samples analyzed?	Yes No N/A
ICP	serial dilution %D values acceptable?	Yes No N/A
ICP	post digestion spike required?	Yes No N/A
ICP	post digestion spike values acceptable?	Yes No N/A
Star	ndards traceable?	Yes No N/A
Star	ndards expired?	Yes No N/A
Tra	nscription/calculation errors?	Yes No N/A
	mments:	

_			,	
7.	FURNACE AA QUALITY CONTROL (Levels D and E)	V	×1	N1/A
	icate injections performed as required?			
	licate injection %RSD values acceptable?			
	ytical spikes performed as required?			
Analy	ytical spike recoveries acceptable?	Yes	Nø	N/A
Stand	dards traceable?	Yes	Nþ	N/A
Stand	dards expired?	Yes	No	N/A
MSA	A performed as required?	Yes	No	N/A
	A results acceptable?			
	scription/calculation errors?			
	nments:			
			\	
8.	HOLDING TIMES (all levels) uples properly preserved?	Ves	No	N/A
Samp	iples properly preserved?	Vec	No	NJ/A
	ple holding times acceptable?		<i>J</i> ***	1 1/2 %
Com	nments:			
-,				

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)		
Results reported for all requested analyses?	Yes No	MA
Results reported for all requested analyses? Results supported in the raw data? (Levels D, E)	Yes No	(MA)
Samples properly prepared? (Levels D, E)	Yes No	(N/A)
Samples properly prepared? (Levels D, E) Detection limits meet RDL?	(Yes) No	N/A
Transcription/calculation errors? (Levels D, E)	Yes No	N/A)
Comments:		
		<u> </u>
	-	

Appendix 6

Additional Documentation Requested by Client

Job Number: 280-61368-1

Sdg Number: JP0872

Method Blank - Batch: 280-248528

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

Solid

10/21/2014 0035 Analysis Date: 10/20/2014 0700

Prep Date: Leach Date:

Dilution:

N/A

MB 280-248528/1-A

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-248842 280-248528

N/A mg/Kg Instrument ID:

Lab File ID:

MT_026 26e102014.asc

Initial Weight/Volume: Final Weight/Volume:

1.00 g 100 mL

MDL RL Result Qual Analyte 5.0 1.6 В 2.10 Aluminum 0.60 0.38 U 0.38 **Antimony** 0.66 1.0 u 0.66 Arsenic 0.50 U 0.076 0.076 Barium 0.20 U 0.033 0.033 Beryllium 2.0 0.98 0.98 U Boron 50.0 14.1 14.1 U Calcium 0.058 0.20 0.058 U Chromium 0.10 1.0 U 0.10 Cobalt U 0.22 1.0 0.22 Copper 5.0 6.06 3.8 Iron 0.50 U 0.27 0.27 Lead 20.0 3.7 3.7 U Magnesium U 0.10 1:0 0.10 Manganese U 0.26 2.0 0.26 Molybdenum 300 41.0 41.0 U Potassium 0.86 1.0 U 0:86 Selenium U 5.7 10.0 5.7 Silicon 0.16 0.20 В 0.163 Silver 0.094 2.0 U 0.094 Vanadium 0.40 1.0 В 0.745 Zinc

Method Blank - Batch: 280-248528

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

Solid

1.0

10/21/2014 1823 10/20/2014 0700

MB 280-248528/1-A

Prep Date: Leach Date:

Analysis Date:

Dilution:

N/A

280-249003 Analysis Batch: 280-248528 Prep Batch: Leach Batch: N/A

Units: mg/Kg Instrument ID: Lab File ID:

Initial Weight/Volume:

MT_026 26c102114.asc

1.00 g 100 mL Final Weight/Volume:

Analyte	Result	Qual	MDL	RL
Cadmium	0.041	U	0.041	0.20
Nickel	0.12	U	0.12	4.0
Sodium	59.0	U	59.0	120

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Lab Control Sample - Batch: 280-248528

Method: 6010B Preparation: 3050B

Lab Sample ID:

LCS 280-248528/2-A

Analysis Batch:

280-248842

mg/Kg

Instrument ID:

MT_026

Client Matrix: Dilution:

Solid

Prep Batch: Leach Batch: 280-248528

Lab File ID:

Final Weight/Volume:

26e102014.asc

Analysis Date:

Units:

N/A

Initial Weight/Volume:

1.00 g 100 mL

Prep Date: Leach Date: 10/21/2014 0038

10/20/2014 0700

N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	208.4	104	82 - 116	ika malakunga menangan pengabuhan ngan pengabuhan
Antimony	50.0	51.39	103	82 - 110	
Arsenic	100	94.61	95	85 - 110	
Barium	200	195.9	98	87 - 112	
Beryllium	5.00	4.91	98	84 - 114	
Boron	100	100.5	101	80 - 120	
Calcium	5000	5054	101	82 - 114	
Chromium	20.0	21.81	109	84 - 114	٠
Cobalt	50.0	48.65	97	87 - 110	
Copper	25.0	26.29	105	88 - 110	
Iron	100	108.0	108	87 - 120	
Lead	50.0	50.14	100	86 - 110	
Magnesium	5000	4689	94	90 - 110	
Manganese	50.0	49.71	99	88 - 110	
Molybdenum	100	107.8	108	86 - 110	
Potassium	5000	4910	98	89 - 110	
Selenium	200	213.4	107	83 - 110	
Silicon	1000	80.42	8	10 - 70	N
Silver	5.00	5.49	110	87 - 114	
Vanadium	50.0	50.54	101	88 - 110	
Zinc	50.0	48.55	97	76 - 114	

Lab Control Sample - Batch: 280-248528

Method: 6010B Preparation: 3050B

Lab Sample ID:

LCS 280-248528/2-A Solid

Analysis Batch:

280-249003

Instrument ID: Lab File ID:

MT_026 26c102114.asc

Client Matrix: Dilution:

1.0

Prep Batch: Leach Batch:

Units:

280-248528 N/A

mg/Kg

Initial Weight/Volume: Final Weight/Volume:

1.00 g 100 mL

Qual

Analysis Date: Prep Date:

10/21/2014 1826 10/20/2014 0700

Leach Date: N/A

Analyte	Spike Amount	Result	% Rec.	Limit
Cadmium	10.0	10.89	109	87 110
Nickel	50.0	53.33	107	87 - 110
Sodium	5000	5535	111	90 - 112

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike - Batch: 280-248528

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-61368-1 Solid

Analysis Batch: Prep Batch:

280-248842 280-248528

Instrument ID: Lab File ID:

MT 026

Client Matrix: Dilution:

1.0

N/A Leach Batch:

26e102014.asc

Analysis Date:

10/21/2014 0048 10/20/2014 0700 Units:

mg/Kg

Initial Weight/Volume: Final Weight/Volume:

1.10 g 100 mL

Prep Date: Leach Date:

N/A

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	4540	189	5257	379	50 - 200	4
Antimony	0.37 U	47.3	31.55	67	20 - 200	
Arsenic	2.0	94.7	77.76	80	76 - 111	
Barium	38.5	189	205.3	88	52 - 159	
Boron	0.95 U	94.7	80.70	85	80 - 120	
Calcium	7970	4730	12430	94	43 - 165	
Chromium	3.6	18.9	21.70	95	70 - 200	
	7.1	47.3	46.30	83	72 - 106	
Cobalt	13.8	23.7	35.21	90	37 - 187	
Copper	21600	94.7	22640	1143	70 - 200	4
Iron	2.8	47.3	42.71	84	70 - 200	
Lead	3370	4730	8021	98	64 - 145	
Magnesium	248	47.3	291.0	92	40 - 200	4
Manganese	0.25 U	94.7	86.97	92	75 - 103	
Molybdenum	466	4730	4525	86	56 - 172	
Potassium	0.83 U	189	174.3	92	76 - 104	
Selenium	325	947	486.1	17	20 - 200	N
Silicon		4.73	4.67	99	75 - 141	
Silver	0.15 U	47.3	96.96	96	50 - 169	
Vanadium	51.7		73.70	81	70 - 200	
Zinc	35.4	47.3	13.10	01	,0 200	

Matrix Spike - Batch: 280-248528

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

280-61368-1 Solid

Analysis Batch: Prep Batch:

Units:

280-249003 280-248528 Instrument ID:

Lab File ID:

MT_026 26c102114.asc

Dilution: Analysis Date: 1.0 10/21/2014 1836 10/20/2014 0700 Leach Batch: N/A mg/Kg Initial Weight/Volume: Final Weight/Volume:

1.10 g 100 mL

Prep Date: Leach Date:

Qual Limit Result % Rec. Spike Amount Sample Result/Qual Analyte 40 - 130 96 9.18 9.47 В 0.11 Cadmium 61 - 126 48.90 90 47.3 6.5 Nickel 78 - 111 4730 101 5174 386 Sodium

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike - Batch: 280-248528

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

280-61368-1

Solid

2.0

Analysis Date: Prep Date:

10/21/2014 1942 10/20/2014 0700

Leach Date:

Dilution:

N/A

Analysis Batch: Prep Batch:

Leach Batch:

Units:

280-249003 280-248528

N/A mg/Kg Instrument ID:

Lab File ID:

MT_026

26c102114.asc

Initial Weight/Volume:

1.10 g 100 mL

Final Weight/Volume:

Analyte	Sample Result	/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Beryllium	0.064	U	4.73	4.11	87	72 - 105	y gyddynggene en trobene trotte ei tribe

Job Number: 280-61368-1

Sdg Number: JP0872

Duplicate - Batch: 280-248528

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

280-61368-1

Solid

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-248842 280-248528 N/A

mg/Kg

Lab File ID:

MT_026 Instrument ID: 26e102014.asc

Initial Weight/Volume: Final Weight/Volume:

1.04 g 100 mL

Analysis Date: Prep Date:

Dilution:

10/21/2014 0045 10/20/2014 0700

Leach Date:

N/A

Analyte	Sample Result/Qual	Result	RPD	Limit	Qua
Aluminum	4540	4086	11	40	
Antimony	0.37 U	0.38	NC	40	U
Arsenic	2.0	1.98	3	30	
Barium	38.5	42.62	10	30	
Boron	0.95 U	0.98	NC	30	U
Calcium	7970	6505	20	30	
Chromium	3.6	3.62	0.03	40	
Cobalt	7.1	7.16	2	30	
Copper	13.8	14.19	3	30	
ron :	21600	23280	8	40	
_ead	2.8	3.21	12	40	
Magnesium	3370	3429	2	30	
Manganese	248	257.1	4	40	
Molybdenum	0.25 U	0.26	NC	30	U
Potassium	466	452.2	3	40	
Selenium	0.83 U	0.86	NC	30	U
Silicon	325	323.8	0.4	40	N
Silver	0.15 U	0.16	, NC	30	U
Vanadium	51.7	56.39	9	30	
Zinc	35.4	39.00	10	40	

Duplicate - Batch: 280-248528

Method: 6010B Preparation: 3050B

Initial Weight/Volume:

Final Weight/Volume:

Lab Sample ID: Client Matrix:

280-61368-1 Solid 1.0

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-249003 280-248528 N/A

mg/Kg

Instrument ID: Lab File ID:

MT_026 26c102114.asc

1.04 g

100 mL

Dilution: Analysis Date: Prep Date:

10/21/2014 1833 10/20/2014 0700

Leach Date:

N/A

Analyte	Sample Result	t/Qual	Result	RPD.	Limit	Qual
Cadmium	0.11	В	0.110	3	30	В
Nickel	6.5		5.98	9.	30	-
Sodium	386		313.8	21	30	
				21		

Job Number: 280-61368-1

Sdg Number: JP0872

Duplicate - Batch: 280-248528

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

280-61368-1

Solid

Dilution: Analysis Date:

10/21/2014 1940

Prep Date: Leach Date:

2.0

10/20/2014 0700

N/A

280-249003 Analysis Batch: Prep Batch:

Leach Batch:

Units:

280-248528

N/A mg/Kg Instrument ID:

Lab File ID:

MT_026

26c102114.asc 1.04 g

Initial Weight/Volume: Final Weight/Volume:

100 mL

Analyte	Sample Resul	t/Qual	Result	RPD	Limit	Qual
Beryllium	0.064	U	0.066	NC	30	U

Job Number: 280-61368-1

Sdg Number: JP0872

Method: 7471A Method Blank - Batch: 280-248899 Preparation: 7471A

Lab Sample ID:

MB 280-248899/1-A

Solid

Client: Washington Closure Hanford

Client Matrix:

Dilution:

Analysis Date: Prep Date:

10/21/2014 1852 10/21/2014 1515

Leach Date:

N/A

Analysis Batch: 280-249102 Prep Batch:

Leach Batch:

Units:

280-248899

N/A

mg/Kg

Instrument ID:

Lab File ID:

MT 033 141021aa.txt

Initial Weight/Volume:

6 g

Final Weight/Volume:

50 mL

MT_033

.6 g

50 mL

141021aa.txt

Analyte

Result

Qual

MDL

RL.

Mercury

0.0055

Ū

0.0055

0.017

Lab Control Sample - Batch: 280-248899

Method: 7471A Preparation: 7471A

Instrument ID:

Initial Weight/Volume:

Final Weight/Volume:

Lab File ID:

Lab Sample ID: Client Matrix:

LCS 280-248899/2-A

Solid

1.0

10/21/2014 1855 Analysis Date:

Prep Date: Leach Date:

Dilution:

10/21/2014 1515

N/A

Spike Amount

Analysis Batch:

Prep Batch:

Units:

Leach Batch:

0.417

Analysis Batch:

Prep Batch:

Leach Batch:

Units:

Result

280-249102

280-248899

N/A

mg/Kg

% Rec.

Limit

Mercury

Analyte

0.434

280-249102

280-248899

104

87 - 111

Qual

Matrix Spike - Batch: 280-248899

280-61368-1

Lab Sample ID: Client Matrix:

Solid

1.0

Analysis Date: Prep Date:

10/21/2014 1515

Dilution:

Leach Date: N/A

10/21/2014 1902

Sample Result/Qual

Spike Amount

U

N/A

mg/Kg

Initial Weight/Volume: Final Weight/Volume:

Method: 7471A

Instrument ID:

Lab File ID:

Preparation: 7471A

141021aa.txt 0.56 g

MT_033

50 mL

Qual

Analyte Mercury

0.0050

0.465

0.489

Result

105

% Rec.

Limit 87 - 111

Job Number: 280-61368-1

Sdg Number: JP0872

Duplicate - Batch: 280-248899

Client: Washington Closure Hanford

Method: 7471A Preparation: 7471A

Lab Sample ID:

280-61368-1

Solid

Analysis Batch:

280-249102 280-248899 Instrument ID:

MT_033

Client Matrix:

Prep Batch:

Lab File ID:

141021aa.txt

Dilution:

1.0

Leach Batch:

Analysis Date:

10/21/2014 1859

Units:

N/A mg/Kg Initial Weight/Volume: Final Weight/Volume:

0.51 g 50 mL

Prep Date:

10/21/2014 1515

Leach Date:

N/A

Sample Result/Qual

Result

RPD NC

Limit

Qual

Analyte Mercury

0.0050

U

0.0068

20

U

Page 1049 of 118

Date:

24 November 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Site 100-D-81

Subject: PCB - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	С	See note 1
J1V114	10/15/14	Soil	C	See note 1
J1V115	10/15/14	Soil	С	See note 1
J1V116	10/15/14	Soil	С	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V117 J1V118	10/15/14	Soil	С	See note 1
J1V119	10/15/14	Soil	C	See note 1
	10/15/14	Soil	C	See note 1
J1V120	10/15/14	Soil	C	See note 1
J1V121	10/15/14	Soil	С	See note 1
J1V122	10/15/14	Soil	Ċ	See note 1
J1V123	10/15/14	Soil	C	See note 1
J1V124 J1V125	10/15/14	Soil	c	See note 1

^{1 -} PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Holding times are not applicable for PCB analysis.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the

unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data Package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE 1 OF 1
COMMENTS: No qualifiers a	assigned		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V113

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-1

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1252

Date Received: 10/17/2014 0900

	8082 Polyci	hiorinated Bipheny	is (PCBs) by G	as Chroma	tography	
Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date:	8082 3550C 1.0 10/21/2014 1448 10/20/2014 1407	Analysis Batch: Prep Batch:	280-248859 280-248723	In Fi In	strument ID: itial Weight/Volume: nal Weight/Volume; jection Volume; esult Type;	SGC_W 31.1 g 5 mL 1 uL PRIMARY
Analyte	DryWt Corrected: Y	Result (u	g/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8		U	2.8	10
		8.1		U	8.1	17
Arodor 1221		2.0		U	2.0	10
Aroclor 1232		4.7		U	4.7	10
Arodor 1242		4.7		Ū	4.7	10
Arodor 1248		2.6		Ū	2.6	10
Aroclor 1254	•	2.6		Ü	2.6	10
Arodor 1260		2.0		Ü	2.0	
Surrogate		%Rec		Qualifier		nce Limits
Decachlorobiphen	vl	79			59 - 130	
Tetrachloro-m-xyle	•	74			53 - 128	3
retractiono-in-xyle	яю					

V11/22/14

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V114

Lab Sample ID:

280-61368-2

Client Matrix:

Solid

% Moisture:

4.3

Date Sampled: 10/15/2014 1242

Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls	(PCBs) by Gas Chromatography
--------------------------------	------------------------------

Analysis Method: Prep Method:

8082 3550C 1.0

Client: Washington Closure Hanford

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Initial Weight/Volume: SGC_W 30.9 g

Final Weight/Volume:

5 mL 1 uL

Injection Volume: Result Type:

PRIMARY

Analysis Date: Prep Date:

Dilution:

10/21/2014 1512 10/20/2014 1407

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Arodor 1016		2.8	U	2.8	10
Arodor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Arodor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	υ	2.6	10
Arodor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-yylene	73		53 - 128

V (122/10)

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V115

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-3

Client Matrix:

Solid

% Moisture:

3.6

Date Sampled: 10/15/2014 1248

Date Received: 10/17/2014 0900

	8082 Polych	iorinated Biphenyl	(PCBs) by G	as Chrom	atography	
Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date:	8082 3550C 1.0 10/21/2014 1623 10/20/2014 1407	Analysis Batch: Prep Batch:	280-248859 280-248723	li F	nstrument ID: nitial Weight/Volume: inal Weight/Volume: njection Volume: Result Type:	SGC_W 30.0 g 5 mL 1 uL PRIMARY
5 ali da	DryWt Corrected: Y	Result (ug	/Kg)	Qualifier	MDL	RL
Analyte		2.9		Ū	2.9	10
Arodor 1016		8.3		U	8.3	17
Arodor 1221		2.1		U	2.1	10
Aroclor 1232		4.8		U	4.8	10
Arodor 1242		4.8		U	4.8	10
Aroclor 1248		2.7		Ū	2.7	10
Arodor 1254		2.7		Ū	2.7	10
Aroclor 1260		2.7		•		
Surrogate		%Rec		Qualifier		ance Limits
Decachlorobipheny	1	75	-		59 - 13	
Tetrachloro-m-xyle		71			53 - 12	0

Vilarling

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V116

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-4

Client Matrix:

Solid

% Moisture:

5.9

Date Sampled: 10/15/2014 1232

Date Received: 10/17/2014 0900

8082 Polychiorinated	Rinhenvis.	(PCBs) by Gas	Chromatography
8082 Polychiorinated	Ribbenviz	(PCDS) by Gas	Cittottiatography

Analysis Method: Prep Method:

8082 3550C Analysis Batch:

280-248859

Instrument ID: Initial Weight/Volume: SGC_W

Prep Batch:

30.4 g 5 mL

Dilution:

1.0

280-248723

Final Weight/Volume: Injection Volume:

1 uL

Analysis Date: Prep Date:

10/21/2014 1646 10/20/2014 1407

Result	Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Aroclor 1016		2.9	U	2.9	10	
Arodor 1221		8.4	U	8.4	17	
Arodor 1232		2.1	U	2.1	10	
Arodor 1242		4.9	Ü	4.9	10	
		4.9	Ū	4.9	10	
Aroclor 1248		2.7	Ū	2.7	10	
Arodor 1254 Arodor 1260		2.7	Ü	2.7	10	
Surrogate		%Rec	Qualifier	Accepta	ance Limits	
Decachlorobiphenyl		75		59 - 130)	
Tetrachloro-m-xvlene		71		53 - 128	3	

Virlin

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V117

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-5

10/21/2014 1710

10/20/2014 1407

Client Matrix:

Solid

% Moisture:

3.5

Date Sampled: 10/15/2014 1238

Date Received: 10/17/2014 0900

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

8082 3550C 1.0

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID:

Initial Weight/Volume: Final Weight/Volume: SGC_W 31.0 g 5 mL

Injection Volume:

1 uL

Result Type:

PRIMARY

Analyta	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Analyte		2.8	U	2.8	10	
Arodor 1016		8.0	U	8.0	17	
Arodor 1221		2.0	Ü	2.0	10	
Arodor 1232			Ú	4.7	10	
Arodor 1242		4.7		4.7	10	
Aroclor 1248		4.7	U	2.6	10	
Aroclor 1254		2.6	U		10	
Arodor 1260		2.6	U	2.6	10	
0		%Rec	Qualifier	Accept	ance Limits	
Surrogate		79		59 - 13	0	
Decachlorobiphenyl				53 - 12	8	
Tetrachloro-m-xylene		75		• • • • • • • • • • • • • • • • • • • •		

Vilalid

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V118

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-6

Client Matrix:

Solid

% Moisture:

Date Sampled: 10/15/2014 1223

Date Received: 10/17/2014 0900

8082 Polychlorinated	Rinhenvis	(PCRs) by Gas	Chromatography

Analysis Method:

8082

Analysis Batch:

280-248859

3.1

Instrument ID:

SGC_W

Prep Method:

3550C

Prep Batch:

Initial Weight/Volume:

31.0 g

Dilution:

1.0

280-248723

Final Weight/Volume:

5 mL 1 uL

Analysis Date: Prep Date:

10/21/2014 1734 10/20/2014 1407 Injection Volume: Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Arodor 1016		2.8	U	2.8	10
		8.0	U	8.0	16
Aroclor 1221		2.0	Ü	2.0	10
Aroclor 1232		4.7	Ü	4.7	. 10
Arodor 1242		4.7	Ū	4.7	10
Arodor 1248		2.6	Ü	2.6	10
Arodor 1254			Ü	2.6	10
Arodor 1260		2.6	U	2.0	
Cumpanta		%Rec	Qualifier	Accept	ance Limits
Surrogate		76		59 - 13	0
Decachlorobiphenyl Tetrachloro-m-xylene		73		53 - 12	8

Villed

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V119

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-7

10/21/2014 1821

10/20/2014 1407

Client Matrix:

Dilution:

Analysis Date:

Prep Date:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1228

Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatograph	9092 Dobrehlorinator	Binhenvis (PCB)	s) by Gas Chr	omatography
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Analysis Method: Prep Method:

Tetrachloro-m-xylene

8082 3550C

1.0

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Initial Weight/Volume: SGC_W 30.5 g

Final Weight/Volume: Injection Volume:

5 mL 1 uL

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
		2.8	U	2.8	10	
Aroclor 1016		8.2	Ū	8.2	17	
Arodor 1221			ŭ	2.0	10	
Arodor 1232		2.0	=	4.8	10	
Arodor 1242		4.8	U		10	
Aroclor 1248		4.8	υ	4.8		
Aroclor 1254		2.7	U	2.7	10	
Arodor 1260		2.7	U	2.7	10	
Cumanata		%Rec	Qualifier	Accept	ance Limits	
Surrogate		78		59 - 13	0	
Decachlorobiphenyl		· =		53 - 12	8	
Tetrachloro-m-xylene		73			=	

Vulndre

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V120

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-8

Client Matrix:

Solid

% Moisture:

5.5

Date Sampled: 10/15/2014 1213

Date Received: 10/17/2014 0900

•	0002 F019C11	lorinated Bipheny				
Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date:	8082 3550C 1.0 10/21/2014 1844 10/20/2014 1407	Analysis Batch: Prep Batch:	280-248859 280-248723	Initia Fina Injed	rument ID: al Weight/Volume: al Weight/Volume: ction Volume: ault Type:	SGC_W 30.6 g 5 mL 1 uL PRIMARY
) - a b d o	DryWt Corrected: Y	Result (u	g/Kg)	Qualifier	MDL	RL
Analyte		2.9		U	2.9	10
Aroctor 1016		8.3		U	8.3	17
Arodor 1221		2.1		U	2.1	10
Arodor 1232		4.8		U	4.8	10
Arodor 1242		4.8		Ü	4.8	10
Aroclor 1248				Ü	2.7	10
Aroclor 1254		2.7		Ü	2.7	10
Arodor 1260		2.7		J		
Surrogate		%Rec		Qualifier		ance Limits
Decachlorobiphenyl		73			59 - 13	
Tetrachloro-m-xyler		70			53 - 12	В

MINNH

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V121

Lab Sample ID:

280-61368-9

Client Matrix:

Solid

% Moisture:

5.0

Date Sampled: 10/15/2014 1218

Date Received: 10/17/2014 0900

8082 Polychlorinated	Biphenyls	(PCBs) by	Gas	Chromatography

Analysis Method: Prep Method:

8082 3550C 1.0

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID:

SGC_W Initial Weight/Volume: 30.7 g

Final Weight/Volume: Injection Volume:

5 mL 1 uL

Analysis Date: Prep Date:

Dilution:

10/21/2014 1908 10/20/2014 1407

Result Type:

PRIMARY

Analyte	Dm dA# Corrected: V	Deput (valler)	Qualifier	MDL	RL	
	DryWt Corrected: Y	Result (ug/Kg)	Quanner	MUL	NL .	
Arodor 1016		2.8	U	2.8	10	
Arodor 1221		8.2	U	8.2	17	
Arodor 1232		2.1	U	2.1	10	
Arodor 1242		4.8	U	4.8	10	
Arodor 1248		4.8	U	4.8	10	
Aroclor 1254		2.7	U	2.7	10	
Arodor 1260		2.7	U	2.7	10	
Surrogate		%Rec	Qualifier	Accepta	ance Limits	
Decachlorobiphenyl		76		59 - 130)	
Tetrachloro-m-xylene		71		53 - 128	3	

Wilmin

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V122

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-10

Client Matrix:

Solid

10/21/2014 1931

10/20/2014 1407

% Moisture:

3.7

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls	(PCBs) by Gas Ci	nromatograpiiy
Analysis Batch:	280-248859	Instrument II

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

8082 3550C 1.0

Prep Batch:

280-248723

D: Initial Weight/Volume:

SGC_W 31.2 g Final Weight/Volume:

5 mL

Injection Volume: Result Type:

1 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Arodor 1010 Arodor 1221	•	8.0	U	8.0	16
		2.0	Ü	2.0	10
Aroclor 1232		4.7	Ü	4.7	10
Aroclor 1242		4.7	Ü	4.7	10
Arodor 1248		2.6	Ü	2.6	10
Arodor 1254 Arodor 1260		2.6	Ü	2.6	10
Surrogate		%Rec	Qualifier	Ac	ceptance Limits
Decachlorobiphenyl		73	re year dan amerika dan dan dan dan dan dan dan dan dan da	59	- 130
Tetrachloro-m-xylene		69		53	- 128

Wilreld

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V123

Lab Sample ID:

Client Matrix:

Solid

280-61368-11

10/21/2014 1955

10/20/2014 1407

% Moisture:

3.2

Date Sampled: 10/15/2014 1209

Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PC	PCBs) by Gas	Chromatography
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Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

8082 3550C

1.0

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Initial Weight/Volume:

SGC_W 30.7 g

Final Weight/Volume: Injection Volume:

5 mL 1 uL

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Arodor 1016		2.8	U	2.8	10	
Aroclor 1221		8.1	U	8.1	17	
Arodor 1232		2.0	U	2.0	10	
Aroclor 1242		4.7	υ	4.7	10	
Aroclor 1248		4.7	U	4.7	10	
Arodor 1254		2.6	U	2.6	10	
Arodor 1260		2.6	υ	2.6	10	
Surrogate		%Rec	Qualifier	Accepta	ance Limits	
Decachlorobiphenyl		74		59 - 130	0	
Tetrachloro-m-xylene		68		53 - 128	8	

W. (12) 14

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V124

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-12

Client Matrix:

Solid

% Moisture:

5.3

Date Sampled: 10/15/2014 1308

Date Received: 10/17/2014 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography	9092 Polychlorinated	Rinhenvis	(PCBs) by Gas	Chromatography
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Analysis Method: Prep Method:

8082 3550C Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Initial Weight/Volume: Final Weight/Volume:

SGC_W 30.3 g 5 mL

1.0 Dilution:

Analysis Date: Prep Date:

10/21/2014 2019 10/20/2014 1407 Injection Volume: Result Type:

1 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
		2.9	U	2.9	10
Arodor 1016		8.4	Ū	8.4	17
Arodor 1221		2.1	Ū	2.1	10
Aroclor 1232		4.9	Ü	4.9	10
Arodor 1242		4.9	Ü	4.9	10
Arodor 1248	•		Ü	2.7	10
Arodor 1254		2.7	Ü	2.7	10
Arodor 1260		2.7	U	2.7	
Surrogate		%Rec	Qualifier	Accepta	ance Limits

59 - 130 72 Decachlorobiphenyl 53 - 128 67 Tetrachloro-m-xylene

Viladia

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V125

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-13

Client Matrix:

Solid

% Moisture:

9.4

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

	8082 Polychlorinated Bit	nhenvis (PCBs) l	ov Gas	Chromatography
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Analysis Method: Prep Method:

8082 3550C Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Initial Weight/Volume: SGC_W 30.2 g

1.0 Dilution:

Analysis Date: Prep Date:

10/21/2014 2042 10/20/2014 1407

Final Weight/Volume: Injection Volume:

5 mL 1 uL

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Arodor 1016		3.0	U	3.0	11	
		8.8	υ	8.8	18	
Arodor 1221		2.2	Ū	2.2	11	
Arodor 1232		5.1	ŭ	5.1	11	
Arodor 1242		5.1	U	5.1	11	
Aroclor 1248			Ü	2.9	11	
Arodor 1254		2.9	_	2.9	11	
Arodor 1260		2.9	U	2.5	• •	
Surrogate		%Rec	Qualifier Acceptance Limits			
Decachlorobiphenyl		76		59 - 13	0	
Tetrachloro-m-vylene		67		53 - 12	8	

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872 SAF#: RC-075

Date SDG Closed: October 17, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID 280-61368-1	ANALYSES REQUESTED 6010/7471/WTPH-D+/8310/8082	ANALYSES PERFORMED 6010B/7471A/NWTPH-Dx/8310/8082
J1V113 J1V114 J1V115 J1V116 J1V117 J1V118 J1V119 J1V120 J1V121 J1V122 J1V123		6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A/NWTPH-Dx/8310/8082
J1V124 J1V125 J1V126	280-61368-12 280-61368-13 280-61368-14	6010/7471/WTPH-D+/8310/8082 6010/7471/WTPH-D+/8310/8082 6010/7471	6010B/7471A/NWTPH-Dx/8310/8082 6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on RECEIPT ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs

No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington C	IOSUIO Haii	Compa	AIN OF CUST ny Contact n Kessner	Tele	phone No. 4688			KESSNER, JH		P	Price Code		8	Data Turnaround	
Project Designation		Sampli	g Location S					SAF No.		1	٦	gay	, ,	015	
100-D/DR Field Remediate	on		D-81, Verification, exca		OA		-	Dethed	of Shlomont			_			
ce Chest No. RCC-O	7-013	EL-	ogbook No. 1662-03		0000812	000		Com	mercial Carr ading/Air Bill		red	Ex_			
Shipped To	•	Offeite	Property No. A 131	274				Dill Or L	See	0	SPC		· -		
TestAmerica Denvei												1	1		
TestAmerica Richland			Preservation	Cool 4C	. Cool 4C	Cool 4C	Cool 40	-			_	-	-		
			Type of Container	GIP	#G	aG	•0	-			-	-		-	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1	-		_	-		-	-	
None			Volume	250mL	125mL	250mL	250ml	-					-	-	
Special Handling and/or None 10-15-14CMB 20 CEO! 4C	Storage	÷	Sample Analysis	See sem (1) in Special Instructions	TPH-Diesel Range - WTPH-O +	PAHs - 8310	PCBs - 8			2.					
0	Matrix	Sample Dat	Sample Time	GENERAL				繼續		如斯	地級链			HOSE	
J1V113	SOIL	10/15/1		×.	x.	x'	x				-		-	-	
J1V#4	SOIL	10/15/1	-	X,	x'	X.	×	•			-	-		-	
J1V#45	SOIL	10/15/12		X	x.	X.	X	1			-	+		-	
J1V116	SOIL	10/15/19	1 1232	X	X	1	×	+		_	+	+	+	+	
J1V117	SOIL	10/15/11	1 1238	X.	× .	IAL INSTR	1X			_				1	
Reinquished ByRemoved From Reinquished ByRemolled From Court WCH Reinquished ByRemolled From	Detertine 13 Louis Time 15 Louis Time 15 Louis Time 15 Louis Time 15 Louis Time 10 Lou	Received ByrSto Received ByrSto Received ByrSto Received ByrSto Received ByrSto	produce Date/Ten 10 - 15 - 14 10 - 15 - 14 Tred in Date/Ten 10 - 16 - 14 Onto In Date/Ten 10 / 17, 10 / 17,	1 154 4 154 10-15- 0-330	14 Sel	cium, Chromiu Inium, Silicon	m, Cobal , Silver, S	l Copper adium, Vi		, Merc	ury - 7471 - (
Relinquished By/Removed From	Date/Time				-	JP0	872	•			•		•		
FINAL SAMPLE DISPOSITION WCH-EE-011	athod	Dis	posed By Date	/Time		,		•							

			VIII OF AUGT	ODVIC	ANDI	EANA	I VCI	SPECIA	ST	RC-07	75-454	Page 2 of 3	
Washington Closure Hanford		Comp	CHAIN OF CUSTODY/SAMPLE ANALYS Compeny Contact Telephone No. 375-4688					Project Coordinator KESSNER, JH		Price Code		Data Turnaround	
H, Walter ject Designation			ling Location	1			ľ	RC-075		٦	days	OD	
100-D/DR Field Remediation		war and the same of the same o	0-D-81, Verification, excar		OA			Method of Shipm	ent		- et		
Chest No.	-013		Logbook No. -1662-03	ľ	000D8120	000		Commercial (Fed	EX		
KCC-07	013			22/1				Bill of Lading/Air					
TestAmerica Denver			Property No. 1/3/3	44			-	See	0	5PC			
er Labs Shipped To TestAmerica Richland		٠.	Preservation	Cool 4C	. Cool 4C	Cool 4C	Cool 4C						
			Type of Container	G/P	вG	øG	· eG			-			
	PACIBEMARKS		No. of Container(s)	1	1	1	1				-		
OSSIBLE SAMPLE HAZA Me	KDS/KEMAKAS		Volume	250mL	125mL	250mL	250mL						
							_	+-1		1			
pecial Handling and/or S	torage		Sample Analysis	See ilem (1) in Special Instructions	TPH-Dissol Range - WTPH-D +	PAHs - 8310	PC8s - 80	162					
Secreta No.	Matrix	Sample D	ite Sample Time		DEMONE						西 黎科森300		
IVIBI	SOIL	10/15/	4 1223	x .	x,	x '	×						
IVM9	SOIL	10/15/	, 1	x'	x'	×.	x'				-		
1/1120	SOIL	10/13/	4 1213	x.	X.	X!	*						
-	SOIL			12.	x ·	X.	1 ×						
1V121		10/15/		1.	4.	×	×						
1V122 CHAIN OF POS	SOIL	10/15/	Sign/Print Names		SPEC	IAL INSTR	UCTION	8					
Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From By/Removed From Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From	Described (3) De	Received By/S 114 Received By/S 10 40 B Received By/S C B 41 C Received By/S	Description Descri	15 45 15 45 15 10-15 0730	Cake Seed	CP Metals - 6 eium, Chromiu nium, Silicon,	01011K (CI m., Cobatt Silver, Sc	ices-out List; Auri ; Copper, Iron, Lisa ; Comm, Vanadium, 2	and, Magni Zinc}; Mer	cury - 7471 - (C	EVENED JOON J. TO.	ium, Boron, Ceidmiu n, Nickel, Potassaium Cityana	
FINAL SAMPLE Disposal Methods DISPOSITION	od		eposed By Dete	Time		TP08	72		•				

Washington C	logure Hanf	ord CHA	AIN OF CUST	ODY/S	SAMP	LE ANA	LYSI	S REQU	EST	RC-0	75-454		Page 3 of 3
ollector	ANDRIG HAIH	Compa	ny Contact n Kessner	Tel	ephone No			Project Coordinat KESSNER, J	or .	Price Code			Data Turnaroun
H. Webet	<u></u>	Sampilir	ng Location					SAF No.			7	days	8B
100-D/DR Fleid Remedial	ion		-D-81, Vertification, exca		lan.			RC-075 Method of Shipm	ant .		<u> </u>	1	
RCC-07	-013		ogbook No. 1862-03		COA 000D8	12000		Commercial (Carrier	1	Ex_	-	
Shipped To	0,0	Offsite	Property No. / 121	211				Bill of Lading/Air	BIII No.	CAC			
TestAmerica Denve	r		A13/2	17				285	0	590	_	1	
Other Labe Shipped To TestAmerica Richland			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40						
	*		Type of Container	G/P	aG	aG .	æG			<u> </u>		+	
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	-			-	+	
None	·		Volume :	250mL	125mL	250mL	250mL	4			-	_	
Special Handling and/or	Storage		Sample Analysis	See tem (1) Special Instructions	Range -	PAHs - 8310	PCBs - 8X	262			٠		
Sample No.	Matrix	Sample Date	Sample Time					THE REAL PROPERTY.	開製				
J1V#29	ŞOIL	iolisti	4 1209	X!	x	1 x '	X	'			+	_	
J1V424	SOIL.	10/15/1	4 1308	X	·X	· X	x.	'			+-	-	
J1\1325	SOIL.	10/15/1	4 1202	X		· x '	X	'			+-	+	
J1V126	SOIL	10/15/	14 1157	X	nte	nin	NIA	4		-	+	+	-
CHAIN OF P Relinquished By/Removed From Relinquished By/Removed From Chart Dec 25 Tag	Date/Time (3)	5 Received By/Stop	10-15-14	\$ 1915	114	-1-1 Channels	010TR (CI	S lose-out List) (Alum , Copper, Iron, Lea Idium, Vanadium, 2	d Magni	PARETI MERIKANIA	DEM. MILITY	ALEXANDER ILLE III, TOTAL	Boron, Cadmium okel, Potassium,
Reinquished By/Removed From C. B. 196 Reinquished By/Removed From C. B. 1 ng hour Reinquished By/Removed From Reinquished By/Removed From Reinquished By/Removed From	The 10-16-14	1000 Ba Received By/Ster G. Bit has Received By/Ster	Hole, Ind Committee To -16 -14 The Detailing To John Detailing To John Detailing To John John John John John John John Joh	10-15 073C	-14					KIND	od Via	and e	
			osed By Date	Time									

Appendix 5 Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION

LEVEL:						
PROJECT:	100-D-	8/	DATA PACKAG	E: 1909	553	
VALIDATOR:	ELR	LAB: TA		DATE: \(\lambda\)	151/14	
			SDG:	57809E		
		ANALYSES :	PERFORMED			
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)			
SAMPLES/MA	TRIX					
210113	711114	JIVIIS	IIVIL	4 71V	117	
JIVICY	J11119	211160	JINISI	710	ادر	
710157	111124	JIVISS				
					Soil	l
Fechnical verific	PACKAGE COMP	present?	***************************************		Yes(No
Fechnical verific		present?	***************************************		Yes(No
Fechnical verific	cation documentation	present?	***************************************		Yes(No
Fechnical verific	cation documentation	present?	***************************************		Yes (No
Fechnical verific	cation documentation	present?	***************************************		Yes(No
Comments: 2. INSTF	cation documentation	n present?	LIBRATIONS (Lo	evels D and E)		
Comments: Initial calibratio	cation documentation RUMENT PERFOR ons acceptable?	n present?	LIBRATIONS (L	evels D and E)	Yes	No f
Comments: INSTR Initial calibratio	RUMENT PERFOR	A present?	LIBRATIONS (L	evels D and E)	Yes	No No
Comments: Instruction Initial calibratio Continuing calil Standards tracea	RUMENT PERFOR ons acceptable?	MANCE AND CA	LIBRATIONS (L	evels D and E)	Yes Yes Yes	No No
2. INSTE Initial calibratio Continuing calil Standards tracea	RUMENT PERFOR ons acceptable? brations acceptable?	A present?	LIBRATIONS (Lo	evels D and E)	YesYesYes	No No No No
2. INSTF Initial calibratio Continuing calil Standards traces Standards expir Calculation che	RUMENT PERFOR ons acceptable?	AMANCE AND CA	LIBRATIONS (Lo	evels D and E)	YesYesYesYes	No No No No No

PCB DATA VALIDATION CHECKLIST

BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No
Calibration blank results acceptable? (Levels D, E)	Yes No WA
Laboratory blanks analyzed?	Ves No N/A
Laboratory blank results acceptable?	Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No X/A
Comments:	no FB
4. ACCURACY (Levels C, D, and E) Surrogates analyzed?	
Surrogate recoveries acceptable?	Yes No WA
Surrogates traceable? (Levels D, E)	Yes No N/A
Surrogates expired? (Levels D, E)	Yes No N/A
MS/MSD samples analyzed?	Yes No N/A
MS/MSD results acceptable?	Yes No NA
MS/MSD standards NIST traceable? (Levels D, E)	Yes No N
MS/MSD standards expired? (Levels D, E)	Yes No N/A
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	(Yes)No N/A
Standards traceable? (Levels D, E)	Yes No 21/A
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Y& No) N/A
Performance audit sample results acceptable?	Yes No (N/A)
Comments:	
	NO PAT

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)	
Duplicate RPD values acceptable?	
Duplicate results acceptable?	Yes No NA
MS/MSD standards NIST traceable? (Levels D, E)	Yes No NO
MS/MSD standards expired? (Levels D, E)	Yes No N/A
Field duplicate RPD values acceptable?	Yes No N/A
Field split RPD values acceptable?	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No (N/A)
Comments:	
6. SYSTEM PERFORMANCE (Levels D and E)	
Chromatographic performance acceptable?	Yes No N/A
Positive results resolved acceptably?	Yes No N/A
Comments:	
7. HOLDING TIMES (all levels)	Yes No N/A
Samples properly preserved?	
Sample holding times acceptable?	165 110 1177
Comments:	

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DE	TECTION LIMITS (all
levels)	Van Na OVA
Compound identification acceptable? (Levels D, E)	Yes No Uyax
Compound quantitation acceptable? (Levels D, E)	Yes No (N/A)
Results reported for all requested analyses?	Yes No NA
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No (N/A)
Detection limits meet RDI?	
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	
9. SAMPLE CLEANUP (Levels D and E) Fluoricil ® (or other absorbent) cleanup performed?	Yes No N/A
Fluoricil ® (or other absorbent) cleanup performed? Lot check performed?	Yes No N/A
Lot check performed? Check recoveries acceptable?	Yes No N/A
Check recoveries acceptable?	Yes No N/A
GPC cleanup performed?	Yes No N/A
GPC check performed?	Yes No N/A
GPC check recoveries acceptable?	Ves No N/A
GPC calibration performed?	Ves No N/A
GPC calibration check performed?	Ves No N/A
GPC calibration check retention times acceptable?	Ves No N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	Ves No N/A
Analytical batch QC given similar cleanup?	Ves No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	

Appendix 6 Additional Documentation Requested by Client

Quality Control Results

Job Number: 280-61368-1

Sdg Number: JP0872

Method Blank - Batch: 280-248723

Client: Washington Closure Hanford

Method: 8082 Preparation: 3550C

Lab Sample ID: Client Matrix:

Analysis Date:

Prep Date:

Leach Date:

Dilution:

MB 280-248723/1-A Solid

1.0

10/21/2014 1401 10/20/2014 1407

N/A

Analysis Batch: Prep Batch:

280-248859 280-248723 Leach Batch: Units:

N/A ug/Kg Instrument ID:

Lab File ID: Initial Weight/Volume:

Final Weight/Volume: Injection Volume: Column ID:

10211411.D 31.6 g 5 mL

SGC_W

1 uL **PRIMARY**

Analyte	Result	Qual	MDL	RL	
7 1101710	0.6	U	2.6	9.5	
Arodor 1016	2.6	-	7.6	16	
Arodor 1221	7.6	U	1.9	9.5	
Arodor 1232	1.9	U		9.5	
Arodor 1242	4.4	U	4.4		
	4.4	U	4.4	9.5	
Arodor 1248	2.5	U	2.5	9.5	
Arodor 1254	2.5	U	2.5	9.5	
Arodor 1260	2.3	•			
O	% Rec		Acceptance Limits		
Surrogate			** AOO		

Decachlorobiphenyl Tetrachioro-m-xylene 79 68

Analysis Batch:

Prep Batch:

Units:

Leach Batch:

59 - 130 53 - 128

Lab Control Sample - Batch: 280-248723

LCS 280-248723/2-A

Lab Sample ID: Client Matrix: Dilution:

Solid 1.0

Analysis Date: Prep Date:

10/21/2014 1425 10/20/2014 1407

Leach Date:

N/A

Method: 8082 Preparation: 3550C

Instrument ID: 280-248859 280-248723

Lab File ID: Initial Weight/Volume: Final Weight/Volume:

31.7 g 5 mL 1 uL

10211412.D

SGC_W

Injection Volume: Column ID:

PRIMARY

Analyta	Spike Amount	Result	% Rec.	Limit	Qual	
Analyte Aroclor 1016	31.5	25.8 27.6	82 87	54 - 132 62 - 129		
Arodor 1260	31.5	Rec	-	acceptance Limits		
Surrogate Decachlorobiphenyl Tetrachloro-m-xylene		78 73	59 - 130 53 - 128			

N/A

ug/Kg

Quality Control Results

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248723

Method: 8082 Preparation: 3550C

MS Lab Sample ID:

280-61368-2 Solid

Analysis Batch:

280-248859

Instrument ID: Lab File ID:

SGC_W

5 mL

Client Matrix: Dilution:

1.0

Client: Washington Closure Hanford

Prep Batch: Leach Batch: 280-248723 N/A

Initial Weight/Volume:

10211415.D 30.8 g

Analysis Date: Prep Date:

Leach Date:

10/21/2014 1536 10/20/2014 1407 Final Weight/Volume: Injection Volume: Column ID:

1 uL PRIMARY

MSD Lab Sample ID:

280-61368-2 Solid

N/A

Analysis Batch: Prep Batch:

280-248859 280-248723 Instrument ID: Lab File ID:

Injection Volume:

Column ID:

SGC_W 10211416.D

Client Matrix: Dilution:

1.0

Leach Batch:

N/A

Initial Weight/Volume: Final Weight/Volume: 30.4 g 5 mL

Analysis Date: Prep Date:

10/21/2014 1559 10/20/2014 1407

1 uL **PRIMARY**

Leach Date:

Aroclor 1016 Aroclor 1260

Analyte

N/A

MS	Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
88	87	54 - 132	0	26		
89	90	62 - 129	3	26		
	MS % Rec	MSD 9	% Rec	Acc	eptance Limit	S

Surrogate 59 - 130 78 79 Decachlorobiphenyl 53 - 128 76 79 Tetrachloro-m-xylene

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248723

Method: 8082

Preparation: 3550C

MS Lab Sample ID: Client Matrix:

Analysis Date:

Prep Date:

Leach Date:

Dilution:

280-61368-2

10/21/2014 1536

10/20/2014 1407

Solid

1.0

N/A

Units: ug/Kg

MSD Lab Sample ID: Client Matrix:

Dilution:

280-61368-2 Solid

1.0

Analysis Date: Prep Date:

10/21/2014 1559 10/20/2014 1407

Leach Date:

N/A

Analyte	Sample Result/Qu	ıal	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Arodor 1016	2.8	U	33.9	34,4	29.8	29.9	
Arodor 1260	2.6	U	33.9	34.4	30.1	30.9	

Date: 24 November 2014

To: Washington Closure Hanford Inc. (technical representative)

From: ELR Consulting

Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste

Site 100-D-81

Subject: Polyaromatic Hydrocarbon - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	С	See note 1
J1V114	10/15/14	Soil	С	See note 1
J1V115	10/15/14	Soil	С	See note 1
J1V116	10/15/14	Soil	С	See note 1
J1V117	10/15/14	Soil	С	See note 1
J1V118	10/15/14	Soil	С	See note 1
J1V119	10/15/14	Soil	С	See note 1
J1V120	10/15/14	Soil	С	See note 1
J1V121	10/15/14	Soil	С	See note 1
J1V122	10/15/14	Soil	С	See note 1
J1V123	10/15/14	Soil	С	See note 1
J1V124	10/15/14	Soil	С	See note 1
J1V125	10/15/14	Soil	С	See note 1

^{1 -} Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field (equipment) Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

· Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field

duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), Data Validation Services, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2 Summary of Data Qualification

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE_1_OF_1
COMMENTS: No qualifiers :	assigned		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V113

Lab Sample ID:

280-61368-1

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1252

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C

Analysis Batch:

280-248858

Instrument ID:

CHHPLC_G

Dilution:

1.0

Prep Batch:

280-248659

Initial Weight/Volume: Final Weight/Volume:

30.1 g 4 mL

Analysis Date: Prep Date:

10/21/2014 1417 10/20/2014 1259 Injection Volume: Result Type:

20 uL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo(g,h,i)perylene		7.5	U	7.5	31
Benzo(k)fluoranthene		4.1	U	4.1	16
Chrysene		5.0	U	5.0	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	42
Fluorene		5.5	U	5.5	31
ndeno[1,2,3-cd]pyrene		12	U	12	31
Vaphthalene		12	U	12	100
Phenanthrene		12	U	12	42
Pyrene		12	U	12	42
Surrogate		%Rec	Qualifier Acceptance Limits		nce Limits
Terphenyl-d14 (SUR)		88		72 - 115	·

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V114

Lab Sample ID:

Client Matrix:

Solid

280-61368-2

% Moisture:

4.3

Date Sampled: 10/15/2014 1242

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Prep Date:

8310 3550C

10/20/2014 1259

1.0

Dilution: Analysis Date: 10/21/2014 1549

Client: Washington Closure Hanford

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

Initial Weight/Volume: Final Weight/Volume:

31.0 g 4 mL 20 uL

CHHPLC_G

Injection Volume: Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo(b)fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	Ū	7.3	30
Benzo(k)fluoranthene		4.0	Ū	4.0	15
		4.9	Ü	4.9	40
Chrysene Dibenzo(a,h)anthracene		11	Ü	-11	30
Fluoranthene		13	Ü	13	40
		5.3	Ũ	5.3	30
Fluorene		12	Ü	12	30
Indeno[1,2,3-cd]pyrene		12	Ü	12	100
Naphthalene		12	Ü	12	40
Phenanthrene Pyrene		12	Ü	12	40
Surrogate		%Rec	Qualifier	Accepta	ance Limits
Terphenyl-d14 (SUR)	And the second s	89		72 - 11	5

M (122/14

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V115

Lab Sample ID:

Client Matrix:

Solid

280-61368-3

% Moisture:

3.6

Date Sampled: 10/15/2014 1248

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID: Initial Weight/Volume: Final Weight/Volume: CHHPLC_G 30.0 g 4 mL

Dilution: Analysis Date:

Prep Date:

1.0

Client: Washington Closure Hanford

10/21/2014 1620 10/20/2014 1259 Injection Volume: Result Type:

20 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4,1	U	4.1	16
Chrysene		5.0	U	5.0	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	42
Pyrene		12	U	12	42
Surrogate		%Rec	Qualifier	Accepta	ance Limits
Terphenyl-d14 (SUR)		85		72 - 115	5

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V116

Lab Sample ID:

280-61368-4

Client Matrix:

Solid

% Moisture:

5.9

Date Sampled: 10/15/2014 1232

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 30.5 g 4 mL

Analysis Date: Prep Date:

Dilution:

10/21/2014 1650 10/20/2014 1259 Injection Volume: Result Type:

20 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.4	U	9.4	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		6.7	U	6.7	16
Benzo[b]fluoranthene		4.4	U	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.1	U	5.1	42
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		14	U	14	42
Fluorene		5.5	U	5.5	31
ndeno[1,2,3-cd]pyrene		13	U	13	31
Naphthalene		13	U	13	100
Phenanthrene		13	U	13	42
Pyrene		13	U	13	42
Surrogate		%Rec	Qualifier	Accepta	ance Limits
Terphenyl-d14 (SUR)		83		72 - 11!	5

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V117

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-5

Client Matrix:

Solid

% Moisture:

3.5

Date Sampled: 10/15/2014 1238

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Analysis Date:

Prep Date: `

Dilution:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

CHHPLC_G 32.3 g Initial Weight/Volume:

Final Weight/Volume: Injection Volume:

4 mL 20 uL

10/21/2014 1721 10/20/2014 1259

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.6	U	9.6	96
Acenaphthylene		8.7	U	8.7	96
Anthracene		2.9	U	2.9	19
Benzo[a]anthracene		3.1	U	3.1	14
Benzo[a]pyrene		6.2	U	6.2	14
Benzo[b]fluoranthene		4.0	U	4.0	14
Benzo[g,h,i]perylene		6.9	U	6.9	29
Benzo[k]fluoranthene		3.8	U	3.8	14
Chrysene .		4.7	U	4.7	38
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	38
Fluorene		5.1	U	5.1	29
ndeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	96
Phenanthrene		12	U	12	38
Pyrene		12	U	12	38
Surrogate		%Rec	Qualifier	Accepta	ince Limits
Terphenyl-d14 (SUR)		86		72 - 115	5

11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V118

Lab Sample ID:

280-61368-6

Client Matrix:

Solid

% Moisture:

3.1

Date Sampled: 10/15/2014 1223

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Prep Date:

8310 3550C

Analysis Batch: Prep Batch:

280-248858 280-248659

Instrument ID: Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 30.3 g 4 mL

Dilution: Analysis Date:

1.0

10/21/2014 1751 10/20/2014 1259 Injection Volume: Result Type:

20 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.3	U	3.3	15
Benzo(a)pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41
Surrogate		%Rec	Qualifier Acceptance Limits		nce Limits
Terphenyl-d14 (SUR)	· · · · · · · · · · · · · · · · · · ·	87		72 - 115)

Willsold

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V119

Lab Sample ID:

280-61368-7

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1228

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C

Analysis Batch: Prep Batch:

280-248858 280-248659

Instrument ID: Initial Weight/Volume: CHHPLC_G 31.2 g

Dilution: Analysis Date: 1.0

10/21/2014 1852

Final Weight/Volume: Injection Volume:

4 mL 20 uL

Prep Date: 10/20/2014 1259

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	Ü	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
luoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
ndeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
henanthrene		12	U	12	40
^o yrene		12	U	12	40
Surrogate		%Rec	Qualifier	Accepta	nce Limits
Terphenyl-d14 (SUR)		87		72 - 115	

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V120

Solid

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-8

Client Matrix:

% Moisture:

5.5

Date Sampled: 10/15/2014 1213

Date Received: 10/17/2014 0900

			^
8310	PAHs	(HPL	C)

Analysis Method: Prep Method:

8310 3550C

1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID: Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 32.6 g 4 mL

Dilution: Analysis Date: Prep Date:

10/21/2014 1923 10/20/2014 1259 Injection Volume: Result Type:

20 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo(a)pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	Ü	12	29
Naphthalene		12	Ū	12	97
Phenanthrene		12	Ü	12	39
Pyrene		12	Ü	12	39
Surrogate		%Rec	Qualifier		ance Limits
Terphenyl-d14 (SUR)		84		72 - 11	5

Job Number: 280-61368-1 Client: Washington Closure Hanford

Sdg Number: JP0872

Client Sample ID:

J1V121

Lab Sample ID:

280-61368-9

Client Matrix:

Dilution:

Solid

% Moisture:

5.0

Date Sampled: 10/15/2014 1218

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID: Initial Weight/Volume:

CHHPLC_G 31.0 g

Final Weight/Volume: Injection Volume:

4 mL 20 uL

Analysis Date: Prep Date:

10/21/2014 1953 10/20/2014 1259

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	31
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	31
luoranthene		13	U	13	41
luorene		5.4	U	5.4	31
ndeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
henanthrene		12	U	12	41
Pyrene		12	U	12	41
Surrogate		%Rec	Qualifier	Accepta	ance Limits
Terphenyl-d14 (SUR)		84		72 - 11:	5

W11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V122

Lab Sample ID:

Client Matrix:

Solid

280-61368-10

% Moisture:

3.7

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

CHHPLC_G Initial Weight/Volume: 30.8 g

Final Weight/Volume: Injection Volume:

4 mL 20 uL

Analysis Date: Prep Date:

Dilution:

10/21/2014 2024 10/20/2014 1259

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
ndeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	υ	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40
Surrogate		%Rec	Qualifier Acceptance Limits		
Terphenyl-d14 (SUR)		84	72 - 115		

V11/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V123

Lab Sample ID:

280-61368-11

Client Matrix:

Solid

% Moisture:

Prep Batch:

3.2

Date Sampled: 10/15/2014 1209

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310

3550C

1.0

Dilution: Analysis Date:

Terphenyl-d14 (SUR)

Prep Date:

10/21/2014 2054 10/20/2014 1259 Analysis Batch: 280-248858 Instrument ID:

280-248659

Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 30.0 g 4 mL

Injection Volume: Result Type:

20 uL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.2	U	3.2	21
Benzo(a)anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.1	U	4.1	15
Chrysene		5.0	U	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene	,	13	U	13	41
Fluorene		5.5	U	5.5	31
ndeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	- 100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41
Surrogate		%Rec	Qualifier	Acceptance Limits	

84

W. 172/14

72 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V124

Lab Sample ID:

280-61368-12

10/21/2014 2125

10/20/2014 1259

Client Matrix:

Solid

% Moisture:

5.3

Date Sampled: 10/15/2014 1308

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

8310 3550C

1.0

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

Initial Weight/Volume:

CHHPLC_G 30.8 g

Final Weight/Volume:

4 mL 20 uL

Injection Volume: PRIMARY Result Type:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Acenaphthene		10	U	10	100	
Acenaphthylene		9.3	U	9.3	100	
Anthracene		3.1	U	3.1	21	
Benzo[a]anthracene		3.3	U	3.3	15	
Benzo[a]pyrene		9.8	JΧ	6.6	15	
Benzo[b]fluoranthene		6.0	JX	4.3	15	
Benzo[g,h,i]perylene		7.4	U	7.4	31	
Benzo(k)fluoranthene		4.1	U	4.1	15	
Chrysene		5.7	J	5.0	41	
Dibenzo(a,h)anthracene		11	U	11	31	
Fluoranthene		13	U	13	41	
Fluorene		5.4	U	5.4	31	
ndeno[1,2,3-cd]pyrene		12	U	12	31	
Naphthalene		12	U	12	100	
Phenanthrene		12	U	12	41	
² yrene		12	U	12	41	
Surrogate		%Rec	Qualifier	Acceptance Limits		
Terphenyl-d14 (SUR)		86	72 - 115			

W (1/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V125

Lab Sample ID:

10/21/2014 2155

10/20/2014 1259

Client Matrix:

Solid

280-61368-13

% Moisture:

9.4

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

8310 PAHs (HPLC)

Analysis Method: Prep Method:

Analysis Date:

Terphenyl-d14 (SUR)

Dilution:

Prep Date:

8310 1.0

3550C

Analysis Batch: Prep Batch:

280-248858 280-248659 Instrument ID:

Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 30.4 g

Injection Volume: Result Type:

4 mL 20 uL **PRIMARY**

					k.
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.8	U	9.8	110
Anthracene		3.3	U	3.3	22
Benzo[a]anthracene		3.5	U	3.5	16
Benzo[a]pyrene		7.0	U	7.0	16
Benzo[b]fluoranthene		4.6	U	4.6	16
Benzo[g,h,i]perylene		7.8	U	7.8	33
Benzo[k]fluoranthene		4.3	U	4.3	16
Chrysene		5.3	U	5.3	44
Dibenzo(a,h)anthracene		12	U	12	33
Fluoranthene		14	U	14	44
Fluorene		5.8	U	5.8	33
Indeno[1,2,3-cd]pyrene		13	U	13	33
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	44
Pyrene	•	13	U	13	44
Surrogate		%Rec	Qualifier	Acceptance Limits	

89

Wilmhi

72 - 115

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872 SAF#: RC-075

Date SDG Closed: October 17, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V113	280-61368-1	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V114	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	· 6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIP1

The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs

No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X"

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

Washington C	losure Han	ford CHA	IN OF CUST	ODY/S	AMPL	EANA	LYS	IS REQL	JEST	RC-07	75-454	Page 1	of3
Collector		Compan	y Contact		phone No.			Project Coordin KESSNER		Price Code	5,000,0000	Data Ti	urnaround
H. Weber Project Designation			Kessner g Location	3/5	-4688			SAF No.	JN			১ প্র	D
100-D/DR Field Remediation	n		D-81, Verification, exca	vation		•		RC-075		7	gard) U	D
Ice Chest No.		Fleid Lo	gbook No.	. (OA			Method of Ship	ment ,				
RCC-0	7-013	EL-1	662-03		000D812	000				(Fed	CX.		
Shipped To	3. 11.3001.500	Offsite F	roperty No. 1 17 1	7211				Bill of Lading/A					
TestAmerica Denver			A131	677					حو ر	SPC	1		
TestAmerica Richland			Preservation	Cool 4C	. Cool 4C	Cool 4C	Coal 40	,					
			Type of Container	G/P	æG	#G	aG .						
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1				1		
None			Volume	250mL	125mL	250mL	250mL						
Special Handling and/or S	itorage		Sample Analysis	See Norm (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 80	H2 .			*		
Sample No.	Matrix	Sample Date	Sample Time	STREET, NO.	GREEN SE		北起網治		AND IS	A MARKET		AND ME	NAME AND THE
J1V83	SOIL	10/15/14	1252	х.	~ '	×'	×	•	and the same of th		Contract to the Contract of th	The Samuel Control of	
J1V#14	SOIL	10(15/14	1242	× `	X	x.	×						
J1V#45	SOIL	10/15/14	1248	X	х.	χ.	X.						
J1V116	SOIL	10/15/14	1232	χı	× ·	* -	'x						
J1V117	SOIL	10/15/14	1238	×	\times 1	X.	×'						
CHAIN OF POS	SESSION		Sign/Print Names	1 1 1	SPEC	IAL INSTRU	JCTIONS						
Ralinquished By/Ramoved From Refinquished By/Ramoved From Refinquished By/Ramoved From Refinquished By/Ramoved From 10-15	181 entitated 1810 JUSIUS 1816 entitles 1817 entitles 1817 entitles 1817 entitles 1817 entitles	S Received By Stored	nez/c-Mastin	1545	14 Cald Sele	ium, Chromius	m, Cobalt,	ose-out List) (Alur Copper, tron, Leadium, dium, Vanadium,	ad, Magnes	stum, Manganes	e, Molybdenui	lium, Boron, C m, Nickel, Pot	admlum, assium,
Relinquished By/Removed From Raijnquished By/Removed From C. B. i 11 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	-14 1550 14 Date/Time 073 2 10-16-14 Date/Time	Received By/Stored	telly fride to 18 18 18 18 18 18 18 18 18 18 18 18 18	10-15-1	¥		1.	0, 0.5 Ill	efso.o		KNO	MED	mo
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FINAL SAMPLE Disposal Metho	3	Dispose	d By Dete/T	ine .		JP0	872						
DISPOSITION WCH-EE-011										· · · · · · · · · · · · · · · · · · ·			

Washington Cl	osure Han	tord CH/	AIN OF CUST	ODY/S	AMPL	E ANA	LYS	IS REQU	EST	RC-07	75-454	Page 2	. 010
Collector		Compa	ny Contact		phone No.			Project Coordin KESSNER.		Price Code		Data Tu	rnaround
H. Walser			Kessner	375	-4688	-		SAF No.	317			\$	FB
Project Designation 100-D/DR Field Remediation			ng Location -D-81, Verification, exca	vation				RC-075		7	gart		D
Ica Chest No.			ogbook No.		COA			Method of Ship			51		
KCC-07	-013	EL-1	1662-03		000D812	000		Commercia	(Carrier	1 Fed	٤ _×		
Shipped To		Offsite	Property No. 1171	2711				Bill of Lading/A					
TestAmerica Denver			A131	47				500	<u> </u>	spc_			
Other Labs Shipped To TestAmerica Rightand		٠.	Preservation	Cool 4C	. Cool 4C	Cool 4C	Cool 40						
			Type of Container	G/P	aG	•G	eG						
POSSIBLE SAMPLE HAZA	RDS/REMARKS		No. of Container(s)	1	1	1	1						
None			Volume	250mL	126mL	250mL	250mL						
Special Handling and/or St Money 10 -15 -14 CMB E COOT 4 C	corage		Sample Analysis	See item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PCBs - 80	082					
Sample No.	Matrix	Sample Date	Sample Time	REMINE	3446642	排料 据料	Sec. 25	ALL ANY A SHEEK		N COLUMN TO	MEDICAL	を記述し	相關的
J1V18	SOIL	10/15/16	1 1223	* '	x'	× '	'×						
J1V#19	SOIL	10/15/16		x'	x'	×,	x'						
J1\4120	SOIL	10/15/10	_	x.	X.	X'	×	•					
J1V121	SOIL	10/15/14		× ·	× '	X	·×						
J1V122	SOIL	10/15/1		7	K.	×	×	•					
CHAIN OF POS	SESSION		Sign/Print Names		CONTRACTOR OF STREET	AL INSTRU							
Retinquished By/Removed From Retinquished By/Removed From Retinquished By/Removed From C. B. 19 10 - 15 - 10 Retinquished By/Removed From Retinquished By/Retinquished By/Retinquishe	Legatime	Received By/Store Received By/Store 1040 Box	Determine Determine	15 4.9 15 4.9 155 155	Calci	um Chromiur	n Cohalt	ose-out List) (Alur Copper, Iron, Lau dium, Vanadium,	ad Magner	sium. Manganes	e, Molybdenu	m, Nickel, Pot	assium,
Retinguished By/Removed From	10-16-14 Date/Time 07 10-16-14 Date/Time	Received By/Store Received By/Store	d In Date/Time	* :						4	DATE	emme	
Relinquished By/Removed From	Date/Time	Received By/Store	V/ 6/17/1	4 9:00	_						10-11	g.	
FINAL SAMPLE DISPOSITION WCH-EE-011	1	Dispos	sed By Date/	Time		P08-	72						

Washington C	losure Hanf	ord CHA	AIN OF CUST	ODY/S	SAMF	PLE ANA	LYSI	S REQUES	T	RC-07	5-454	Pag	ye 3 of 3
Collector		Compa	ny Contact n Kessner		ephone N -4688	0.		Project Coordinator KESSNER, JH	Pr	rice Code		Data	R Turnaround
H. We lock Project Designation			ng Location	3/3	7000			SAF No.	-		-	4	SB
100-D/DR Fleid Remediation	on		D-81, Verification, exca					RC-075			, ,	zano	SB
RCC-07	-013		ogbook No. 1662-03		COA 000DE	812000		Method of Shipment Commercial Car	rier \	Fed 8	<u> </u>		
Shipped To TestAmerica Denvei		Offsite	Property No. A 131 2	274				Bill of Lading/Air Bil		90			
Other Labs Shipped To TestAmerica Richland			Preservation	Cool 4C	Cool 40	C Cool 4C	Cool 40						
			Type of Container	G/P	aG	aG	aG						
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1						
None			Volume :	250mL	125ml	L 250mL	250mL						
Special Handling and/or s	Storage		Sample Analysis	See item (1) in Special Instructions	TPH-Die Range WTPH-0	- PAHs - 8310	PCBs - 80	362		,	٠		
Sample No.	Matrix	Sample Date	Sample Time				的機能			機能關係	and the	AL ARES	
J1V123 J1V124	ŞOIL	10/15/12	1 1209	x!	×	, x .	X	'					
J1V1024	SOIL	10/15/10	1308	X.	X	1X	x	<u> </u>					
J1\425	SOIL	10/15/1	4 1202	X.	X	• × 1	X	•					
J1V126	SOIL	10/15/1	4 1157	X.	niv	A nin	NIA	4					_
					len	PECIAL INSTRU	ICTIONS				L		
Relinquished By/Removed From C. Bringhoushed By/Removed From Relinquished By/Removed From	DeterTime 1312 DeterTime 154: DeterTime 154: DeterTime 073: 10-16-14 DeterTime 073: DeterTime DeterTime	Received By/Store Received By/Store Received By/Store Received By/Store Received By/Store Received By/Store	de in Detertime do in Detertime Dotertime Dotertime	7545 10-15-1 0730	50	(1) ICP Metals - 60 Calcium, Chromiu	10TR (Ck	ose-out List) (Aluminut Copper, Iron, Lead, M dium, Vanadium, Zinc)	agnesiu	m, Manganes	e, Molybd /) (Mercus	enum, Nickel, y}	n, Cadmium, Potassium,
FINAL SAMPLE Disposal Meth	nod	Dispos	sed By Date/	ime		JP08-	12			,			

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	Е
PROJECT:	100-D-8		DATA PACKAG	E: JPO77	5
VALIDATOR:	ECR	LAB: TA	C	DATE:	21/14
			SDG:	JP0872	
		ANALYSES	PERFORMED		
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MAT	RIX:				
JIVII3	JIVILY J	10115 11	U114 JII	1117 111	UUT
Jivna			16 221VI	▲	VISK
JIVIZS					
					5011
Technical verification		present?	CASE NARRATIV		Yes No N/A
Initial calibrations a Continuing calibrat Standards traceable Standards expired? Calculation check a	acceptable?erions acceptable?				Yes No N/AYes No N/AYes No N/AYes No N/AYes No N/A
Comments:				Mary Mary Mary Mary Mary Mary Mary Mary	

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No
Calibration blank results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	No N/A
Laboratory blank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	Ya(N) NA
Field/trip blank results acceptable? (Levels C, D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No(N/A)
Comments:	No FB
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	X Yes No N/A
Surrogate/system monitoring compound recoveries acceptable?	
Surrogates traceable? (Levels D, E)	Yes No NA
Surrogates expired? (Levels D, E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	Yes No NA
MS/MSD standards NIST traceable? (Levels D, E)	Yes No N/A
MS/MSD standards expired? (Levels D, E)	Yes No (N/A
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	/ -\
Standards traceable? (Levels D, E)	Yes No NA
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	\sim
Performance audit sample(s) analyzed?	Yes (No) U/A
Performance audit sample results acceptable?	<u> </u>
Comments:	
	NOPK

5.	PRECISION (Levels C, D, and E)	
Dupl	licate RPD values acceptable?	Vos No N/A
Dupl	licate results acceptable?	Yes No XI/A
MS/N	MSD standards NIST traceable? (Levels D, E)	Yes No N/A
MS/N	MSD standards expired? (Levels D, E)	
Field	d duplicate RPD values acceptable?	
Field	d split RPD values acceptable?	Yes No
Trans	scription/calculation errors? (Levels D, E)	Yes No N/
Com	nments:	
6.	HOLDING TIMES (all levels)	
Samj	ples properly preserved?	Yes No N/A
Samı	ple holding times acceptable?	Yes No N/A
	nments:	

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETE	CTION LIMITS (all
levels)	
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	Yes No MA
Samples properly prepared? (Levels D, E)	Yes No WA
Detection limits meet RDL?	(.Yes) No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	
9. SAMPLE CLEANUP (Levels D and E) Fluoricil ® (or other aborbant) cleanup performed?	Ves No N/A
Lot check performed?	1 1 1
Check recoveries aceptable?	1
Check materials traceable?	į .
Check materials Expired?	
Analytical batch QC given similar cleanup?	i i
Transcription/Calculation Errors?	
Comments:	\
Continents.	

Appendix 6

Additional Documentation Requested by Client

Job Number: 280-61368-1

Sdg Number: JP0872

Method Blank - Batch: 280-248659

Client: Washington Closure Hanford

Method: 8310 Preparation: 3550C

Lab Sample ID: Client Matrix: MB 280-248659/1-A Solid

10/20/2014 1259

Analysis Batch: Prep Batch: 280-248858 280-248659

Instrument ID: Lab File ID: CHHPLC_G G1021008.D 32.2 g

Dilution: Analysis Date: 1.0 10/21/2014 1316 Leach Batch: Units: N/A ug/Kg

Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID:

4 mL 20 uL PRIMARY

Prep Date: Leach Date:

N/A

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.3	U	9.3	93
Acenaphthylene	8.4	U	8.4	93
Anthracene	2.8	U	2.8	19
Benzo[a]anthracene	3.0	U	3.0	14
Benzo[a]pyrene	6.0	U	6.0	14
Benzo[b]fluoranthene	3.9	U	3.9	14
Benzo[g,h,i]perylene	6.7	U	6.7	28
Benzo[k]fluoranthene	3.7	U	3.7	14
Chrysene	4.5	U	4.5	37
Dibenzo(a,h)anthracene	10	U	10	28
Fluoranthene	12	U	12	37
Fluorene	4.9	U	4.9	28
Indeno[1,2,3-cd]pyrene	11	. U	11	28
Naphthalene	11	U	11	93
Phenanthrene	11	U	11	37
Pyrene	11	U	11	37
Surrogate	% Rec		Acceptance Limits	

Terphenyl-d14 (SUR)

90

72 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Lab Control Sample - Batch: 280-248659

Method: 8310 Preparation: 3550C

Lab Sample ID: Client Matrix:

Solid 1.0

N/A

LCS 280-248659/2-A

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-248858 280-248659 Instrument ID: Lab File ID: Initial Weight/Volume: CHHPLC_G G1021009.D 31.1 g

Dilution: Analysis Date: Prep Date:

Leach Date:

10/21/2014 1347 10/20/2014 1259 N/A ug/Kg

Final Weight/Volume: Injection Volume: Column ID:

4 mL 20 uL PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1930	1650	85	78 - 116	
Acenaphthylene	1930	1620	84	76 - 115	
Anthracene	1930	1600	83	74 - 115	
Benzo[a]anthracene	1930	1700	88	85 - 120	
Benzo[a]pyrene	1930	1710	88	74 - 121	
Benzo[b]fluoranthene	1930	1680	87	85 - 115	
Benzo[g,h,i]perylene	1930	1830	95	85 - 120	
Benzo[k]fluoranthene	1930	1660	86	85 - 115	
Chrysene	1930	1780	92	83 - 115	
Dibenzo(a,h)anthracene	1930	1650	85	83 - 115	
Fluoranthene	1930	1680	87	83 - 115	
Fluorene	1930	1670	87	80 - 115	
ndeno[1,2,3-cd]pyrene	1930	1760	91	85 - 123	
Naphthalene	1930	1590	83	80 - 121	
Phenanthrene	1930	1620	84	80 - 115	
Pyrene	1930	1780	93	75 - 116	
Surrogate	%	Rec	А	cceptance Limits	
Terphenyl-d14 (SUR)	(92	72 - 115		

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248659

Method: 8310 Preparation: 3550C

MS Lab Sample ID: Client Matrix: Dilution: Analysis Date: Prep Date: Leach Date:	280-61368-1 Solid 1.0 10/21/2014 1448 10/20/2014 1259 N/A	Analysis Batch: Prep Batch: Leach Batch:	280-248858 280-248659 N/A	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID:	CHHPLC_G G1021011.D 30.4 g 4 mL 20 uL PRIMARY
MSD Lab Sample ID Client Matrix:): 280-61368-1 Solid	Analysis Batch: Prep Batch:	280-248858 280-248659	Instrument ID: Lab File ID:	CHHPLC_G G1021012.D
Dilution: Analysis Date:	1.0 10/21/2014 1518	Leach Batch:	N/A	Initial Weight/Volume: Final Weight/Volume:	30.3 g 4 mL
Prep Date: Leach Date:	10/20/2014 1259 N/A		·	Injection Volume: Column ID:	20 uL PRIMARY

	2	6 Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qua
Acenaphthene	87	86	78 - 116	0	20		
Acenaphthylene	84	84	76 - 115	0	21		
Anthracene	84	83	74 - 115	1	20		
Benzo[a]anthracene	88	86	85 - 120	2	20		
Benzo[a]pyrene	89	92	74 - 121	3	20		
Benzo[b]fluoranthene	87	86	85 - 115	1	20		
Benzo[g,h,i]perylene	95	94	85 - 120	0	20		
Benzo[k]fluoranthene	86	86	85 - 115	0	20		
Chrysene	92	90	83 - 115	2	20		
Dibenzo(a,h)anthracene	85	84	83 - 115	1	20		
Fluoranthene	88	86	83 - 115	2	20		
luorene	. 88	87	80 - 115	1	20		
ndeno[1,2,3-cd]pyrene	92	91	85 - 123	1	20		
Naphthalene	83	83	80 - 121	0	20		
Phenanthrene	85	84	80 - 115	0	20		
Pyrene	93	91	75 - 116	1	20		
Surrogate		MS % Rec	MSD 9	6 Rec	Acc	eptance Limits	3
Terphenyl-d14 (SUR)		93	89		***************************************	72 - 115	

Terphenyl-d14 (SUR)

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248659

Method: 8310

Preparation: 3550C

MS Lab Sample ID:

280-61368-1

MSD Lab Sample ID:

280-61368-1

Client Matrix:

Solid

Client Matrix:

Solid

Dilution:

Client: Washington Closure Hanford

1.0

Analysis Date:

Dilution:

10/21/2014 1518

Prep Date:

10/21/2014 1448 10/20/2014 1259 Analysis Date: Prep Date:

10/20/2014 1259

Leach Date:

NΑ

Leach Date:

N/A

Analyte	Sample Result/Q	ual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	10	U	2060	2060	1790	1780
Acenaphthylene	9.3	U	2060	2060	1740	1740
Anthracene	3.2	U	2060	2060	1720	1710
Benzo[a]anthracene	3.3	υ	2060	2060	1810	1780
Benzo[a]pyrene	6.7	Ü	2060	2060	1830	1890
Benzo[b]fluoranthene	4.4	Ū	2060	2060	1790	1780
Benzo[g,h,i]perylene	7.5	Ū	2060	2060	1940	1950
Benzo[k]fluoranthene	4.1	Ü	2060	2060	1770	1770
Chrysene	5.0	Ū	2060	2060	1900	1870
Dibenzo(a,h)anthracene	11	Ū	2060	2060	1760	1740
Fluoranthene	13	Ŭ	2060	2060	1800	1780
	5.5	ŭ	2060	2060	1810	1790
Fluorene	12	ŭ	2060	2060	1890	1870
Indeno[1,2,3-cd]pyrene	12	Ŭ	2060	2060	1710	1710
Naphthalene	12	U	2060	2060	1740	1730
Phenanthrene Pyrene	12	U	2060	2060	1910	1890

Units: ug/Kg

Date:

24 November 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Site 100-D-81

Subject:

Wet Chemistry - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	С	See note 1
J1V114	10/15/14	Soil	С	See note 1
J1V115	10/15/14	Soil	С	See note 1
J1V116	10/15/14	Soil	С	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	С	See note 1
J1V119	10/15/14	Soil	С	See note 1
J1V120	10/15/14	Soil	С	See note 1
J1V121	10/15/14	Soil	С	See note 1
J1V122	10/15/14	Soil	С	See note 1
J1V123	10/15/14	Soil	С	See note 1
J1V124	10/15/14	Soil	С	See note 1
J1V125	10/15/14	Soil	С	See note 1

^{1 -} Chromium VI by 7196A

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

· Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), Data Validation Services.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE_1_OF_1			
COMMENTS: No qualifiers assigned						

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No.: 62948

SDG No: JP0872

Date: 21-Oct-14

Client Id Batch Work Order Pa	rameter	Result +- Un	certainty (2s)	Quai	Units	Tracer Yield	MDL	CRDL	RPD
293021 7196_CR6									
J1V113	DOME	4 045 04	+- 0.0E+00		mg/kg	N/A	1,55E-01	1.55E_01	
M494C1AA HEXCHI	. •		+- 0.0E+00 +- 0.0E+00		mg/kg	N/A	1.55E-01		12.1
M494C1AD HEXCHI	KOME	1.00=-01	T- 0.0E+00		myrky	WA	1,002-01	7.00L-01	14.1
J1V114 M494D1AA HEXCHI	ROME	1.91E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V115									
M494E1AA HEXCH	ROME	3.11E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V118			•						
M494F1AA HEXCH	ROME	3.58E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V117									
M494G1AA HEXCH	ROME	2.89E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V118								4 === 04	
M494H1AA HEXCH	ROME	4.54E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-U1	
J1V119	2015	0.745.04	. 0.05.400		ma/ka	N/A	1.55E-01	1.65E.01	
M494J1AA HEXCH	ROME	2.71E-01	+- 0.0E+00		mg/kg	13/73	1,00601	1,000-01	
J1V120 M494K1AA HEXCH	ROME	4.04E-01	+~ 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V121									
M494L1AA HEXCH	IROME	3.54E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1,55E-01	
J1V122									
M494M1AA HEXCH	IROME	1.55E-01	+~ 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V123	•								
M494N1AA HEXCH	ROME	2.71E-01	+~ 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
J1V124								a meen oo i	
M494P1AA HEXCH	IROME	1.55E-01	+- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1V125						NIZA	4 555 04	4 SSIT 04	
M494Q1AA HEXCH	IROME	1.87E-01	+- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
No. of Results: 14				1					

M 11/22/14

TestAmerica inc rptTALRchSaSum mary2 V5.3.5 A2002

PD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Limit criteria is less than the Mde/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Certificate of Analysis

Washington Hanford Closure 2620 Fermi Avenue Richland, WA 99354

October 21, 2014

Attention: Joan Kessner

SAF Number : RC-075

Date SDG Closed : October 16, 2014 Number of Samples : Thirteen (13)

Sample Type : Soil SDG Number : JP0872

Data Deliverable : 7-Day / Summary

CASE NARRATIVE

I. Introduction

On October 16, 2014, thirteen soil samples were received at TestAmerica for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V113	M494C	SOIL	10/16/14
J1V114	M494D	SOIL	10/16/14
J1V115	M494E	SOIL	10/16/14
J1V116	M494F	SOIL	10/16/14
J1V117	M494G	SOIL	10/16/14
J1V118	M494H	SOIL	10/16/14
J1V119	M494J	SOIL	10/16/14
J1V120	M494K	SOIL	10/16/14
J4V121	M494L	SOIL	10/16/14
J1V122	M494M	SOIL	10/16/14
J1V123	M494N	SOIL	10/16/14
J1V124	M494P	SOIL	10/16/14
J1V125	M494Q	SOIL	10/16/14

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was:

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis

Hexavalent Chromium by EPA method 7196A:

The LCS, batch blank, samples, sample duplicate (J1V113) and sample matrix spike (J1V113) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar

Project Manager

3

Washington	Closure Han	ford	CHAI	N OF CUST	ODY/S	SAMPL	E ANA	ALYS	IS REC	UEST	RC-0	75-454	Page 2	of3
Collector H. Weber		:	Company loan K	Contact ·		ephone No. 5-4688			Project Coo		Price Code		Data To	rnaround
Project Designation 100-D/DR Field Remedia	ation		Sampling Location 100-D-81, Verification, excavation			3-1000	SAF No. RC-075		7	7 days		SB		
Ice Chest No. 10-16-14	cms wat-	12-008	Field Logb EL-166			COA 000D812	2000		Method of S Local De		÷			
Shipped To TestAmerica Richl			Offsite Pro				**		Bill of Ladin		. ,			
Other Labs Shipped To TestAmerica Denver				Preservation	Cool 4C									
			- 5	Type of Container	G/P					1				
POSSIBLE SAMPLE HA	ZARDS/REMARKS		Ň	No. of Container(s)	t									
Nane				Volume	125mL									
Special Handling and/or None 10-15-14CM B C00 1 4 C				Sample Analysis	Ctromium Heo - 7196					-				
Sample No.	Matrix	Sample	Date	Sample Time			Telle				- A	15 Mar 20 13		No.
JIV118 MY944	SOIL	10/15	114	1993.	X									
PHOTHM 611/11	SOIL ·	10/15	14	1228	x			1					,	
JIV120 MY94K	SOIL	10/15	114	12131	_ *							1		
J1V121 MY94L	SOIL	10/15	14	12181	*							100		
J1V122 MY94M	SOIL	10/15	114	12021	人:								- ,	
CHAIN OF PO				Sign/Print Names		SPEC	IAL INSTRU	JCTIONS				<u> </u>		
Relinquished By/Removed From	Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time	Received B	y/Stored in sy/Stored in sy/Sto	DeterTine 2-15-14 +0 DeterTine 10-16-14 DeterTine DeterTine DeterTine DeterTine	1313 10151 154 1551 1551 1551 0730	5 10-1 14	7.0-14 cm		041V -35-14			K.Vaoc	No inew	me
DISPOSITION WCH-EE-011						J	P087	72						

Page 3 of 3

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	(c)	D	Е			
PROJECT:	100-D	- 81	DATA PACKAG	E: 1908-	5 1			
VALIDATOR:	ELR	LAB: TA-		DATE: { 2	1 14			
			SDG:	Troops	7			
		ANALYSES	PERFORMED					
Anions/IC	TOC	тох	TPH-418.1	Oil and Grease	Alkalinity			
Ammonia	BOD/COD	Chloride	Chromium-VI	рН	NO ₃ /NO ₂			
Sulfate	TDS	TKN	Phosphate					
SAMPLES/MAT	RIX							
710113	711116	2111116	711116	111117				
711116	JIVILA	7/1/50		7/11/13	رک			
110123	711154	JINIS						
					Soil			
Technical verificat	ACKAGE COMPL	oresent?			Ye No N/A			
Initial calibrations Initial calibrations	MENT PERFORM performed on all ins acceptable?	truments?			Yes No N/A			
	ICV and CCV checks performed on all instruments?							
Standards traceable	?				Yes No N/A			
Standards expired?								
Calculation check a	acceptable?	**********************	•••••	*****************************	Yes Nd N/A			
Comments:		······································						

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3.	BLANKS (Levels B, C, D, and E)				6
ICB	and CCB checks performed for all applicable analyses? (Levels D, E)	•••••	Yes	No	
ICB	and CCB results acceptable? (Levels D, E)	***************************************	Yes	No	W
Labo	oratory blanks analyzed?)	No	N/A
Labo	oratory blank results acceptable?	***************************************	(Yes)	Νo	N/A
Field	d blanks analyzed? (Levels C, D, E)	•••••	Ye	No)	M/A
Field	d blank results acceptable? (Levels C, D, E)		Yes	No	MA
Tran	nscription/calculation errors? (Levels D, E)	***************************************		No	N/A
Com	nments:	no	rs		
4.	ACCURACY (Levels C, D, and E)			_	
Spik	te samples analyzed?	***************************************		No	N/A
Spik	te recoveries acceptable?	***************************************	(Yes)	No	N/A
Sike	standards NIST traceable? (Levels D, E)	***************************************	Yes	No (N/A
Spik	te standards expired? (Levels D, E)) Zes	No	W/A
LCS	S/BSS samples analyzed?		\Ye	No	N/A
LCS	S/BSS results acceptable?	***************************************	Ye	No	N/A
Stan	dards traceable? (Levels D, E)	***************************************	Yes	No(\\\ <u>\</u>
Stan	dards expired? (Levels D, E)	****************	Yes	No(N/A
Tran	nscription/calculation errors? (Levels D, E)	*************************	Yes)Ja	(N/A)
Perf	ormance audit sample(s) analyzed?	***************************************	Yes	(NO)	N/A
Perf	ormance audit sample results acceptable?	•••••	Yes	No	(N)A
Com	nments:				
		1/16	PAK		

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5.	PRECISION (Levels C, D, and E)	
Duplica	ate RPD values acceptable?	
Duplica	ate results acceptable?	
		Yes No NA
MS/MS	SD standards expired? (Levels D, E)	Yes No N/A
		(Yes) No
		Yes No N)
		Yes No (N/A
	ents:	
6.	HOLDING TIMES (all levels)	~
Sample	es properly preserved?	
	holding times acceptable?	
	ents:	`(/

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7.	RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results	reported for all requested analyses?	
Results	supported in the raw data? (Levels D, E)	Yes No N/A
Samples	properly prepared? (Levels D, E)	Yes_No(N/A)
Detection	n limits meet RDL?	Yes No N/A
Transcri	ption/calculation errors? (Levels D, E)	Yes No NA
Comme	nts:	

Appendix 6

Additional Documentation Requested by Client

QC Results Summary
TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No.: 62948

SDG No.: JP0872

Date: 21-Oct-14

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yleid	LCS Recovery	Blas	MDL
7196_CR6 4293021 MATRIX	SPIKE, J1V113			,				
M494C1AC	HEXCHROME	2.88E+01 +- 0.0E+00		mg/kg	N/A	93%	-0.1	1.55E-01
4293021 LCS, M5AMJ1AC	HEXCHROME	1.90E+01 +- 0.0E+00		mg/kg	N/A	95%	0.0	1.55E-01
4293021 BLANK (M5AMJ1AA	C, HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01
No. of Results:	3			,				

TestAmerica Inc

rptSTLRchQcSum
mary V5.3.5 A2002

Blas

- (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software,

Date:

24 November 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Site 100-D-81

Subject:

Diesel Range Organics - Data Package No. JP0872-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0872 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1V113	10/15/14	Soil	С	See note 1
J1V114	10/15/14	Soil	С	See note 1
J1V115	10/15/14	Soil	С	See note 1
J1V116	10/15/14	Soil	С	See note 1
J1V117	10/15/14	Soil	C	See note 1
J1V118	10/15/14	Soil	С	See note 1
J1V119	10/15/14	Soil	С	See note 1
J1V120	10/15/14	Soil	С	See note 1
J1V121	10/15/14	Soil	С	See note 1
J1V122	10/15/14	Soil	С	See note 1
J1V123	10/15/14	Soil	С	See note 1
J1V124	10/15/14	Soil	С	See note 1
J1V125	10/15/14	Soil	С	See note 1

^{1 -} Diesel range organics by 8015B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the C10-C36 results in samples J1V115, J1V116, J1V117, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

Due to method blank contamination, the C10-C28 results in samples J1V115, J1V116, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blank was submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V122/J1V125) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0872 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the C10-C36 results in samples J1V115, J1V116, J1V117, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".
- Due to method blank contamination, the C10-C28 results in samples J1V115, J1V116, J1V120, J1V122, J1V123 and J1V125 were qualified as undetected and flagged "U".

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for decisionmaking purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DIESE RANGE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0872	REVIEWER: ELR	Project: 100-D-81	PAGE_1_OF_1		
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON		
C10-C36	U	J1V115, J1V116 J1V117, J1V120 J1V122, J1V123 J1V125	Method blank contamination		
C-10-C28	U	J1V115, J1V116 J1V120, J1V122 J1V123, J1V125	Method blank contamination		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V113

Lab Sample ID:

280-61368-1

Client Matrix:

Solid

% Moisture:

4.0

Date Sampled: 10/15/2014 1252

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Dilution:

Prep Batch:

280-248804

Lab File ID:

1.0

Initial Weight/Volume:

10220009.D

Analysis Date: Prep Date:

10/22/2014 1225

Final Weight/Volume:

31.7 g 1 mL

10/20/2014 2155

Injection Volume:

1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		670	U	670	3900

Surrogate o-Terphenyl %Rec 69

Qualifier

Acceptance Limits

49 - 115

M112214

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V114

Lab Sample ID:

280-61368-2

Client Matrix:

Solid

% Moisture:

Date Sampled: 10/15/2014 1242

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-249408

4.3

Instrument ID:

SGC_U2a

Prep Method: Dilution:

3550C

Prep Batch:

280-249292

Lab File ID:

10240007.D

RL 4200 4200

1.0

Initial Weight/Volume:

30.0 g

Analysis Date:

10/24/2014 1036

Final Weight/Volume:

1 mL

Prep Date:

10/23/2014 1420

Injection Volume:

1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL
C10-C36		1000	U	1000
C10-C28		710	U	710

Surrogate o-Terphenyl %Rec

Qualifier

Acceptance Limits

49 - 115

63

VII relia

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V115

Lab Sample ID:

280-61368-3

Client Matrix:

Solid

% Moisture:

3.6

Date Sampled: 10/15/2014 1248

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249000

instrument ID:

SGC_U2a

Prep Method: Dilution:

Client: Washington Closure Hanford

Prep Batch:

280-248804

Lab File ID:

10220011.D

1.0

Analysis Date:

Initial Weight/Volume:

31.1 g 1 mL

10/22/2014 1313

Final Weight/Volume:

Prep Date:

10/20/2014 2155

Injection Volume:

1 uL

DryWt Corrected: Y Analyte C10-C36 C10-C28

Result (ug/Kg) 1800 1200

Qualifier JB U JB V

MDL 1000 680

RL 4000 4000

Surrogate o-Terphenyl %Rec 71

Acceptance Limits Qualifier

49 - 115

m/22/19

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V116

Lab Sample ID:

280-61368-4

Client Matrix:

Solid

% Moisture:

5.9

Date Sampled: 10/15/2014 1232

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Dilution:

1.0

Prep Batch:

10220014.D

Analysis Date:

280-248804

Lab File ID:

10/22/2014 1425

Initial Weight/Volume: Final Weight/Volume:

30.6 g

Injection Volume:

1 mL 1 UL

Analyte C10-C36

Prep Date:

10/20/2014 2155 DryWt Corrected: Y

Result (ug/Kg) 1800 730

MDL 1000 710

RL 4200 4200

Surrogate o-Terphenyl

C10-C28

%Rec 72

Qualifier

Qualifier

JB $oldsymbol{O}$

JB U

Acceptance Limits

49 - 115

1/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V117

Lab Sample ID:

280-61368-5

Client Matrix:

200-01300

Solid

% Moisture:

3.5

Date Sampled: 10/15/2014 1238

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

1.0

Analysis Batch: Prep Batch: 280-249000 280-248804

) !

Instrument ID: Lab File ID: SGC_U2a 10220015.D

Initial Weight/Volume:

30.2 g

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analysis Date: Prep Date:

Dilution:

Analyte

C10-C36

10/22/2014 1450 10/20/2014 2155

DryWt Corrected: Y

Result (ug/Kg) 1100 700 Qualifier J B U U MDL 1000 700 RL 4100 4100

C10-C28
Surrogate

o-Terphenyl

%Rec 71 Qualifier

Acceptance Limits

49 - 115

VIII

Job Number: 280-61368-1 Client: Washington Closure Hanford

Sdg Number: JP0872

Client Sample ID:

J1V118

Lab Sample ID:

280-61368-6

Client Matrix:

Solid

% Moisture: 3.1 Date Sampled: 10/15/2014 1223

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch: 280-249000

Instrument ID:

SGC_U2a

Prep Method: Dilution:

3550C

Prep Batch:

280-248804

Lab File ID:

1.0

10220016.D

Analysis Date:

Initial Weight/Volume:

30.0 g

10/22/2014 1514

10/20/2014 2155

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Prep Date: Analyte C10-C36

DryWt Corrected: Y

Result (ug/Kg) 1000 700

70

Qualifier Ū U

MDL 1000 700

RL 4100 4100

C10-C28 Surrogate

o-Terphenyl

%Rec

Qualifier

Acceptance Limits

49 - 115

Villely

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V119

Lab Sample ID:

280-61368-7

Client Matrix:

Solid

% Moisture:

Date Sampled: 10/15/2014 1228

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Dilution: Analysis Date: 1.0

Prep Batch:

280-248804

Lab File ID:

10220017.D

Initial Weight/Volume: Final Weight/Volume:

30.0 g 1 mL

10/22/2014 1538

Injection Volume:

1 uL

Prep Date:

10/20/2014 2155

DryWt Corrected: Y Analyte C10-C36 C10-C28

Result (ug/Kg) 1000 710

Qualifier U

Qualifier

MDL 1000 710

RL 4200 4200

Surrogate o-Terphenyl %Rec 68

Acceptance Limits 49 - 115

Milzzly

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V120

Lab Sample ID:

280-61368-8

Client Matrix:

Solid

% Moisture:

5.5

Date Sampled: 10/15/2014 1213

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Client: Washington Closure Hanford

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Prep Method:

Prep Batch:

280-248804

Lab File ID:

Dilution:

1.0

10220018.D

Initial Weight/Volume:

30.0 g

Analysis Date:

10/22/2014 1602

Final Weight/Volume:

1 mL

Prep Date:

10/20/2014 2155

injection Volume:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 1300 830

Qualifier JB **U** JB U

MDL 1100 720

RL 4200 4200

Surrogate

o-Terphenyl

%Rec 67

Qualifier

Acceptance Limits

49 - 115

V.1/22/14

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V121

Lab Sample ID:

280-61368-9

Client Matrix:

Solid

% Moisture:

5.0

Date Sampled: 10/15/2014 1218

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch: 280-249408

Instrument ID:

SGC_U2a

Prep Method: Dilution:

1.0

Prep Batch:

280-249292

Lab File ID:

10240010.D

Initial Weight/Volume:

31.3 g

Analysis Date:

Final Weight/Volume:

1 mL

Prep Date:

10/24/2014 1148 10/23/2014 1420

Injection Volume:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 1000 680

Ū U

Qualifier

MDL. 1000 680

RL 4000 4000

Surrogate o-Terphenyl

%Rec 63

Qualifier

Acceptance Limits

49 - 115

Villazlig

740. -

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V122

Lab Sample ID:

280-61368-10

Client Matrix:

Solid

% Moisture:

3.7

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

280-249000 Analysis Batch: Prep Batch:

Instrument ID:

SGC_U2a

Dilution:

1.0

280-248804

Lab File ID:

Analysis Date:

Initial Weight/Volume:

10220020.D

Final Weight/Volume:

30.2 g 1 mL

Prep Date:

10/22/2014 1650

Injection Volume:

1 uL

Analyte

10/20/2014 2155

Qualifier JB U

MDL 1000 700

RL 4100 4100

C10-C36 C10-C28

Result (ug/Kg) DryWt Corrected: Y 1300 890

JB **U** Qualifier

Acceptance Limits

Surrogate o-Terphenyl %Rec 71

49 - 115

V112214

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V123

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-11

Client Matrix:

Solid

% Moisture:

3.2

Date Sampled: 10/15/2014 1209

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Prep Method:

1.0

Prep Batch:

280-248804

Lab File ID:

10220023.D

Dilution:

Initial Weight/Volume:

31.3 g

Analysis Date:

10/22/2014 1802

Final Weight/Volume:

1 mL

Prep Date:

10/20/2014 2155

Injection Volume:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 1300 840

Qualifier JB U JB V

MDL 990 670

RL 4000 4000

Surrogate

o-Terphenyl

%Rec 73

Qualifier

Acceptance Limits

49 - 115

V. 12214

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V124

Lab Sample ID:

280-61368-12

Client Matrix:

Solid

5.3 % Moisture:

Date Sampled: 10/15/2014 1308

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-249408

Instrument ID:

SGC_U2a

Prep Method: 1.0 Dilution:

Client: Washington Closure Hanford

Prep Batch:

Lab File ID:

10240011.D

280-249292

Initial Weight/Volume: Final Weight/Volume:

30.3 g 1 mL

Analysis Date: Prep Date:

10/24/2014 1212

Injection Volume:

1 uL

10/23/2014 1420

Result (ug/Kg)

Qualifier

MDL 1000 710

RL 4200 4200

Analyte C10-C36 C10-C28 DryWt Corrected: Y

13000 7800

Qualifier

Acceptance Limits

Surrogate o-Terphenyl %Rec 64

49 - 115

V.12264

Job Number: 280-61368-1

Sdg Number: JP0872

Client Sample ID:

J1V125

Client: Washington Closure Hanford

Lab Sample ID:

280-61368-13

Client Matrix:

Solid

% Moisture:

9.4

Date Sampled: 10/15/2014 1202

Date Received: 10/17/2014 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Prep Method:

3550C

Lab File ID:

10220025.D

Dilution:

1.0

Prep Batch:

280-248804

Analysis Date:

Initial Weight/Volume:

31.0 g

10/22/2014 1850

Final Weight/Volume:

1 mL

Prep Date:

10/20/2014 2155

Injection Volume:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 1200 870

Qualifier JB (JB U

MDL 1100 720

RL 4300 4300

Surrogate o-Terphenyl %Rec 74

Qualifier

Acceptance Limits

49 - 115

Vulrelia

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-61368-1

SDG #: JP0872 SAF#: RC-075

Date SDG Closed: October 17, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID 280-61368-1	ANALYSES REQUESTED 6010/7471/WTPH-D+/8310/8082	ANALYSES PERFORMED 6010B/7471A/NW/TPH-Dx/8310/8082
JIVII4	280-61368-2	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V115	280-61368-3	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V116	280-61368-4	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V117	280-61368-5	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V118	280-61368-6	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V119	280-61368-7	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V120	280-61368-8	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V121	280-61368-9	6010/7471/WTPH-D+/8310/8082	· 6010B/7471A/NWTPH-Dx/8310/8082
J1V122	280-61368-10	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V123	280-61368-11	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V124	280-61368-12	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V125	280-61368-13	6010/7471/WTPH-D+/8310/8082	6010B/7471A/NWTPH-Dx/8310/8082
J1V126	280-61368-14	6010/7471	6010B/7471A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 10/17/2014 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5° C and 1.0° C.

GC SEMIVOLATILES - SW846 8082 - PCBs

No anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

C10-C36 is present in the method blank associated with batch 280-248804 at a level greater than half the reporting limit. As no detectable concentrations of C10-C36 are present in the associated samples at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

Low levels of C10-C28 are present in the method blank associated with batch 280-248804. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary. Associated sample results present above the MDL and/or RL have been flagged with a "B".

No other anomalies were encountered.

HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]pyrene and Benzo[b]fluoranthene in sample J1V124. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X"

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-248528 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Due to matrix interference, samples J1V113, J1V114, J1V118, J1V123 and J1V124 required 2X dilutions prior to the analysis of Beryllium. The reporting limits have been adjusted relative to the dilutions required.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-248528. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Silver is present in the method blank associated with batch 280-248528 at 0.163 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 0.2 mg/kg. TestAmerica's practical quantitation limit (PQL) for Silver is 1 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and associated sample results were either non-detect or less than the reporting limit.

Zinc is present in the method blank associated with batch 280-248528 at 0.745 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V126, the associated sample amounts are twenty times greater than the method blank concentration.

Low levels of Aluminum are present in the method blank associated with batch 280-248528. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-248528 and in the Matrix Spike performed on sample J1V113 in batch 280-248528. The associated sample results have been flagged "N". Silicon is a poor performer and has a history of reacting inconsistently. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V113; therefore, control limits are not applicable.

No other anomalies were encountered.

diector Compa			ompari	IN OF CUST	Tel	ephone No.	E ANA	LYS	Pro	oject Coordina	tor	RC-0	75-454		1 of3 Turnaround
oject Designation 100-D/DR Field Remedia	etion .	Si	mplin	Kessner g Location D-81, Verification, exce		5-4688	• •		SA	KESSNER, J F No. RC-075	IH	7 days 8B			
RCC-(07-013	FI		gbook No. 662-03		COA 000D812									
Hopped To TestAmerica Denv	er	Of	ffeite P	roperty No. A 131	274	1			BIII	of Leding/Air		2950			
her Labs Shipped To TestAmerica Richland			.	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	iċ						
,				Type of Container	GP	#G	#3	#G							
OSSIBLE SAMPLE HA	ZARDS/REMARKS			No. of Container(s)	1	1	1	1						T	
one				Volume	250mL	125mL	250mL	250ml	L						
ipecial Handling and/o	r Storage		٠	Sample Analysis	See Norn (1) in Special Instructions	TPH-Diesel Range - WTPH-0 +	PAHs - 8310	PC8s - 8	1062						
⊢ /Semple No.	Matrix	Sample	Deste	Sample Time	CONTRACTOR OF THE PARTY OF THE						MI E	MARKE			NAME OF THE PERSON OF
J1V113	SOIL	10/15/	14	1252	×.	x.	x'	×	•	Property lands	CACIFOLINA TRACTOR		100000000000000000000000000000000000000		
J1\M4	SOIL	10/15/	14	1242	X,	x'	X.								
J1 VA45	SOIL	10/15/	14	1248	X '	x.	х .	X	•						
J1V116	SOIL	10/15/	14	1232	χι	x.	* *	'x							
J1V117	SOIL	10/15/		1238	x '	× 1	x'	×	•						
CHAIN OF P				Sign/Print Names			IAL INSTRU								
Relinquished By/Removed From Relinquished By/Removed From	Date/Time (57 L)	5 53	igh.	mez/c Math em 10-15-14	1 1545	14 Calc Sele	tum, Chromius	m, Cobalt,	, Cop	oper, Iron, Lead,	, Magne	timony, Arsenic, elum, Manganes cury - 7471 - (C	e, Molybde	num, Nickel, P	, Cadmium, Hotassium,
Relinquished By/Resnoved From	5-14 1550 #14 Debution 07	D Received By	stored gra	telle, Fridge # 1		Y Y			.0.	0.5 TEG @	f:0.0		楼	EVED	
Relinquished By/Remored From	Date/Time Date/Time 10-16-14-0-7-3 Date/Time	Received By	Stored E)					13	enof	o.5 Ile a hel by may	4		-	DOVINE 16-14	and a
Reinquisted By/Removed From FINAL SAMPLE Disposel M. DISPOSITION	Date / I me athod	Received By	Stored	n Dats/Time		-	JP0	872							
WCH-EE-011												.1			

Washington C	losure Hai	nford C	HAIN	OF CUST	ODY/S	AMPL	E ANA	LYSI	S REQU	JEST	RC-0	75-454	Page 2	2 of 3	
Hector H. Wales			mpany Cor Joan Kess			phone No. -4688				ator JH	Price Code		Data T	urnaround	
oject Designation			mpling Loca		3/5	4000			SAF No.	-	_		5	FB	
100-D/DR Field Remediati	on		100-D-81, Verification, excavation						RC-075		7	gart	2		
Chest No.	7-013		Feld Logbook No. COA COA 000D812000				2000		Method of Shipment Commercial Carrier \ Ead &x						
ipped To	1015		site Properi	y No.	22//	0000011		-	Bill of Lading/A	The state of the s	1	4			
TestAmerica Denve	•			1131	274				500	0	SPC				
her Labe Shipped To TestAmerica Richland				reservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
			Тур	e of Container	G/P	aG.	•G	•G							
SSIBLE SAMPLE HAZ	ARDS/REMARKS	3	No.	of Container(s)	1	1	1	1							
one .			1.	Volume	250mL	125mL	250mL	260mL							
									+	_	1			 	
pecial Handling and/or s no 10 -15 -14 CMB COO1 4 C	Storage		San	nple Analysis	See item (1) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310	PC8s-80	12				٠		
µ n§ample No.	Matrix	Sample D	Date	Sample Time	THE REAL PROPERTY.	THE PERSON						MATERIAL PROPERTY.			
IVITIS	SOIL	10/15/	14	1223	x',	× '	× '	~	inne hand to dans or had	I NOT THE REAL PROPERTY.	on particular services		DOMESTIC STREET		
VM49	SOIL	10/15/	14	1228	x/	×'	×,	x'							
VII20	SOIL		14	1213	x.	x ·	x'	x.							
V121	SOIL	10/15/		1918	2.	× '	x.	×							
V122	SOIL	10/15/		1903.	2.	x.	×'	×							
CHAIN OF PO	SSESSION			n/Print Names			IAL INSTRU								
Reinquished By/Removed From	DeterTime (50) 10 15 10 15 10 16 14 10 16 14 DeterTime DeterTime DeterTime	Redshed by/S 10 (0 B Received by/S Received by/S Received by/S	Stored in Stored	DeterTime DeterTime DeterTime DeterTime DeterTime DeterTime	15 4.9 155 10-15 0730	4 Calc Sele	ium. Chromhu	n Cohalt (ee-out List) (AAII Copper, Iron, Las Ium, Vanadium,	id Magne	sium, Manganes cury - 7471 - (C1	e. Motvodenun	engal	bassium,	
INAL SAMPLE Disposed Meth	od .	Di	isposed By	Dute/T	me								•		

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Washington C	losure Han	ford Ch	IAIN	OF CUST	ODY/S	SAMP	LE ANA	LYS	S REQI	JEST	RC-	075-454	Page	3 0/3
Hector		Com	pany Co can Kess	ntact sner .	Tek	ephone No. 5-4688			Project Coord KESSNER	inator	Price Code			Termeround
elect Designation 100-D/DR Field Remediate	ion		piing Loc 00-D-81,	ation Verification, exca	vation				SAF No. RC-075			7 00	Mo	<u> </u>
Cheet No. RCC-07	-013		Logbool L-1662-(000D81	00D812000 Commercial Carrier \F-&\ &\							
ipped To TestAmerica Denve		Offsi	ta Prope	A13/2	74				Bill of Lading	AIr Bill No				
her Labe Shipped To TestAmerica Richland				Preservation	Coel 4C	Cool 4C	Cool 4C	Cool 4						
			Ту	Type of Container		#G	e G	aG						-
OSSIBLE SAMPLE HAZARDS/REMARKS				of Container(s)	1	1	1	1		-	-	-		-
ione				Volume :	250mL	125mL	260mL	250ml		_				
pecial Handling and/or	Storage		Sa	ampie Analysis	See Item (1) in Special Instructions	TPH-Diese Range - WTPt-I-D +		PCBs - 8	082					
р Sample No.	Matrix	Sample D	ate	Sample Time		HARRIE		HIS	THE REAL PROPERTY.		E Hinds		的情報問	
V1230	SOIL	Islei	14	1209	x!	x!	x.	X	•	1	-			-
11/124	SOIL	10/15/	14	1308	X.	X	· X	x	-	1_				
1\4325	SOIL	10/15/	14	1202	X.	X.	1 x '	X						+-
1V126	SOIL.	10/15	114	1157	X	nia	nn	NIE	4	-	+-	+	-	+
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Refinquished By/Removed From	Date/Time	Received By/S	itored in	Date/Time			JP087	1-7	*		10	16+4		
DISPOSITION WCH-EE-011							7100,	1						

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	Е
PROJECT:	100-0-	-81	DATA PACKAG	E: JP0977	2
VALIDATOR:	ELR	LAB: TAC	-	DATE: ((2	1/14
			SDG:	20872	
		ANALYSES	PERFORMED		
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G (WTPH-D	
SAMPLES/MAT	RIX:				
JIVIIS	PIIVIL	211115	21 1116	31117	JIVIIE
310119	710150	JIUIZI	7/1/55	JIVIS	711154
71152					
					56,1
Technical verificat		present?			Yes No N/A
Initial calibrations Continuing calibra	acceptable?ntions acceptable?				1
					Yes No N/A
•					Yes No N/A
	-				\ /
Comments:					

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No NA
Calibration blank results acceptable? (Levels D, E)	Yes No N/A
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Ÿes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes(No) NA
Field/trip blank results acceptable? (Levels C, D, E)	
Transcription/calculation errors? (Levels D, E)	Yes No (N/A)
10-24- 15,16, 20 22 23 23	_ UK
	no PB
4. ACCURACY (Levels C, D, and E) Surrogates/system monitoring compounds analyzed?	Ves No N/A
Surrogates/system monitoring compounds analyzed? Surrogate/system monitoring compound recoveries acceptable?	Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? Surrogates traceable? (Levels D, E)	Yes No (N/A)
Surrogates traceable? (Levels D, E)	Yes No WA
Surrogates expired? (Levels D, E)	Ves No N/A
MS/MSD samples analyzed?	Ved No N/A
MS/MSD results acceptable?	Ves No NA
MS/MSD standards NIST traceable? (Levels D, E)	Vas No N/A
MS/MSD standards expired? (Levels D, E)	
LCS/BSS samples analyzed?	Ved No N/A
LCS/BSS results acceptable?	Ves No N/A
Standards traceable? (Levels D, E)	Ves No N/A
Standards expired? (Levels D, E)	Vac No NA
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	Yes No N/A
Comments:	
	NO PHS

5.	PRECISION (Levels C, D, and E)	
Dupli	licate RPD values acceptable?	
Dupli	licate results acceptable?	Tej No NA
MS/N	MSD standards NIST traceable? (Levels D, E)	Yes No No
MS/N	MSD standards expired? (Levels D, E)	Yes No (N/A)
	duplicate RPD values acceptable?	
	d split RPD values acceptable?	
	scription/calculation errors? (Levels D, E)	
	nments:	
6.	HOLDING TIMES (all levels)	
	aples properly preserved?	Yes No N/A
	nple holding times acceptable?	V I
		\ /
Con	mments:	

DETECTION LIMITS (all
Yes No
Yes No W/A
Yes No N/A
Yes No (1/A)
Yes No N/A
Yes N/A
Yes N/A
Yes No N/A
Yes No N/A
Yes No N/A
Yes No N/A

Appendix 6 Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Method Blank - Batch: 280-248804

Method: NWTPH-Dx Preparation: 3550C

Lab	Sample	ID:
-----	--------	-----

MB 280-248804/1-A

Analysis Batch:

280-249000 280-248804 Instrument ID: Lab File ID:

SGC_U2a 10220038.D

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch:

N/A

Initial Weight/Volume:

30.6 g

Analysis Date: Prep Date:

10/23/2014 0948 10/20/2014 2155 Units:

ug/Kg

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Leach Date:

N/A

Analyte	Result	Qual	MDL	RL
C10-C36	2110	J	980	3900
C10-C28	1900	J	660	3900

Surrogate

% Rec

Acceptance Limits

o-Terphenyl

69

49 - 115

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx Preparation: 3550C

LCS Lab Sample ID:

LCS 280-248804/2-A Solid

Analysis Batch:

280-249000 280-248804

Instrument ID:

SGC_U2a

Client Matrix: Dilution:

Prep Batch: Leach Batch:

Units:

N/A

Lab File ID: Initial Weight/Volume:

10220007.D 30.0 g

Analysis Date:

10/22/2014 1137

ug/Kg

Final Weight/Volume:

1 mL

Prep Date:

10/20/2014 2155

Injection Volume:

1 uL

Leach Date:

N/A

LCSD Lab Sample ID: LCSD 280-248804/3-A Client Matrix:

Solid 1.0

Analysis Batch: Prep Batch:

280-249000 280-248804 Instrument ID: Lab File ID:

SGC_U2a 10220008.D 31.4 g

Analysis Date:

10/22/2014 1201

Leach Batch:

N/A

Initial Weight/Volume: Final Weight/Volume:

1 mL

Prep Date:

10/20/2014 2155

Units:

ug/Kg

Leach Date:

Dilution:

N/A

% Rec.

Injection Volume:

RPD

13

13

1 uL

LCS LCSD Limit

57 - 115

LCS Qual LCSD Qual

Analyte C10-C36

73 87 C10-C28 72 86 Surrogate LCS % Rec

53 - 115 LCSD % Rec 23 23 Acceptance Limits

RPD Limit

o-Terphenyl

54

64

49 - 115

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 280-248804

Method: NWTPH-Dx Preparation: 3550C

LCS Lab Sample ID:

LCS 280-248804/2-A

Units: ug/Kg

LCSD Lab Sample ID:

LCSD 280-248804/3-A

Solid

Dilution:

Solid 1.0

Analysis Date:

Client Matrix:

Dilution:

10/22/2014 1137

Analysis Date: Prep Date:

Client Matrix:

10/22/2014 1201 10/20/2014 2155

10/20/2014 2155

Leach Date:

Prep Date: Leach Date:

N/A

1.0

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	66700	63700	48400	55200
C10-C28	66700	63700	48100	54700

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx

Preparation: 3550C

MS Lab Sample ID: Client Matrix:

280-61368-3 Solid

Analysis Batch:

280-249000

Instrument ID:

SGC_U2a

Dilution:

1.0 10/22/2014 1337 Prep Batch: Leach Batch:

280-248804 N/A

Lab File ID: Initial Weight/Volume: 10220012.D 30.5 g

Analysis Date: Prep Date:

10/20/2014 2155

280-61368-3

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Leach Date:

MSD Lab Sample ID:

N/A

Solid

Analysis Batch:

280-249000 280-248804 Instrument ID:

SGC_U2a

Client Matrix: Dilution: Analysis Date:

1.0

Prep Batch: Leach Batch: N/A

Lab File ID: Initial Weight/Volume: 10220013.D 30.5 g

Prep Date:

10/22/2014 1401 10/20/2014 2155

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Leach Date:

N/A

		Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	77	81	57 - 115	5	23		
C10-C28	. 78	81	56 - 115	5	23		
Surrogate		MS % Rec	MSD 9	6 Rec	Acceptance Limits		S
o-Terphenyl		64	64			1 9 - 115	

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-248804

Method: NWTPH-Dx

MS Lab Sample ID:

280-61368-3

Preparation: 3550C

Client Matrix:

Solid

MSD Lab Sample ID:

280-61368-3

Client Matrix:

Solid

Dilution: Analysis Date:

Dilution:

1.0

10/22/2014 1337 10/20/2014 2155

Analysis Date:

10/22/2014 1401 10/20/2014 2155

Prep Date: Leach Date:

N/A

Prep Date: Leach Date:

N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	1800	J	68100	68100	54600	57300
C10-C28	1200	J	68100	68100	53900	56600

Units: ug/Kg

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Method Blank - Batch: 280-249292

Method: NWTPH-Dx Preparation: 3550C

Lab Sample ID:

MB 280-249292/1-A

Analysis Batch: Prep Batch:

Units:

280-249408 280-249292 Instrument ID:

SGC U2a

Client Matrix: Dilution:

Solid 1.0

Leach Batch:

Lab File ID:

10240005.D

Analysis Date:

10/24/2014 0948

Initial Weight/Volume: N/A

32.0 g

Prep Date:

10/23/2014 1420

ug/Kg

Final Weight/Volume: Injection Volume:

1 mL

Leach Date:

N/A

1 uL

Analyte	Result	Qual	MDL	RL	
C10-C36	930	U	930	3800	
C10-C28	640	U	640	3800	
Surrogate	% Rec		Acceptance Limits		

o-Terphenyl

66

49 - 115

Method: NWTPH-Dx

Lab Control Sample - Batch: 280-249292

Preparation: 3550C

Lab Sample ID:

LCS 280-249292/2-A

Analysis Batch:

280-249408

Instrument ID:

SGC_U2a

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch: 280-249292

Lab File ID: Initial Weight/Volume: 10240006.D 30.4 g

Analysis Date:

10/24/2014 1012

Units:

N/A ug/Kg

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Prep Date: Leach Date: 10/23/2014 1420

N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
C10-C36	65800	54700	83	57 - 115	
C10-C28	65800	54600	83	53 - 115	
Surrogate	%	% Rec		cceptance Limits	
o-Terphenyl	6	S5		49 - 115	

Client: Washington Closure Hanford

Job Number: 280-61368-1

Sdg Number: JP0872

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-249292

Method: NWTPH-Dx Preparation: 3550C

MS Lab Sample ID:

280-61368-2 Solid

Analysis Batch:

280-249408 280-249292 Instrument ID:

SGC_U2a

Client Matrix:

Prep Batch:

Lab File ID:

Dilution:

1.0

Leach Batch:

N/A

Initial Weight/Volume:

10240008.D

Analysis Date: Prep Date:

10/24/2014 1100 10/23/2014 1420 Final Weight/Volume: Injection Volume:

30.2 g 1 mL

1 uL

Leach Date:

N/A

Analysis Batch:

280-249408 Lab File ID:

Instrument ID: SGC_U2a

Client Matrix:

MSD Lab Sample ID:

Solid 1.0

Prep Batch:

280-249292

Initial Weight/Volume:

10240009.D

Dilution: Analysis Date: Prep Date:

Leach Date:

10/24/2014 1124

280-61368-2

Leach Batch:

N/A

Final Weight/Volume: Injection Volume:

30.6 g 1 mL

1 uL

10/23/2014 1420

N/A

% Rec

Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	90	88	57 - 115	4	23		
C10-C28	90	87	56 - 115	5	23		
Surrogate		MS % Rec	MSD %	% Rec	Aco	eptance Limits	S
o-Terphenyl		69	65		4	19 - 115	ere delembron er er er en

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-249292

Method: NWTPH-Dx Preparation: 3550C

MS Lab Sample ID:

280-61368-2

Units: ug/Kg

MSD Lab Sample ID:

280-61368-2

Client Matrix: Dilution:

Solid 1.0

Client Matrix: Solid Dilution:

1.0

Analysis Date:

10/24/2014 1100

Analysis Date: Prep Date:

10/24/2014 1124 10/23/2014 1420

Prep Date: Leach Date: 10/23/2014 1420 N/A

Leach Date:

N/A

Analyte	Sample		MS Spike	MSD Spike	MS	MSD
	Result/Qual		Amount	Amount	Result/Qual	Result/Qual
C10-C36	1000	U	69200	68300	62500	59900
C10-C28	710		69200	68300	62400	59500